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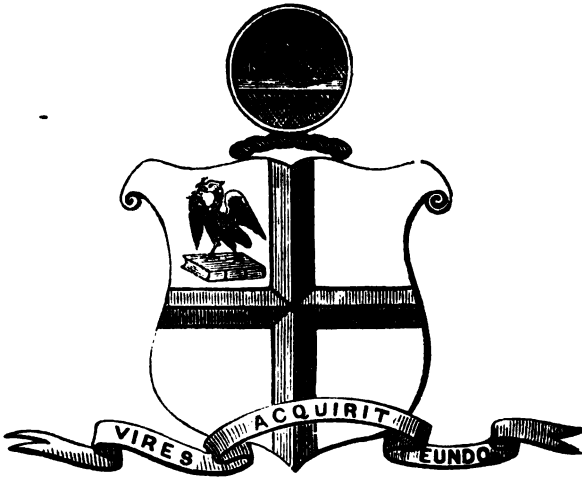






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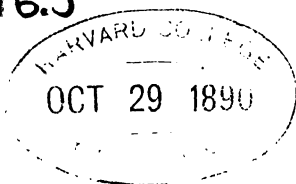
PROCEEDINGS  
OF THE  
LITERARY AND PHILOSOPHICAL SOCIETY  
OF  
LIVERPOOL,  
DURING THE  
SEVENTY-SEVENTH SESSION, 1887-88.  
No. XLII.



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- Feb. 18, 1884 Rutherford, John, LL.B., Lond., 4, *Harrington-street, HONORARY SECRETARY.*
- Nov. 12, 1888 Rutherford, Wm. Watson, (Messrs. Miller, Peel, Hughes & Co.), *Cook-street.*
- April 7, 1862 Samuel, Harry S., 80, *Onslow Gardens, South Kensington, London.*
- March 19, 1866 Sephton, Rev. John, M.A., *Liverpool Institute.*
- Jan. 7, 1878 Shearer, George, M.D., 178, *Upp. Parliament-street.*
- Oct. 18, 1875 Simpson, James, 10, *Rumford-place.*
- Oct. 31, 1881 Smith, A. T., Jun., 18, *Bentley-road, Prince's Park,*

- Dec. 10, 1866 Smith, Elisha (Messrs. Henry Nash & Co.), 12,  
*Tower-buildings North.*
- April 4, 1870 Smith, James, *Ribblesdale Villas*, 22, *Merton-road, Bootle.*
- Feb. 28, 1868 Smith, J. Simm, 1, *Warham-road, Croydon.*
- April 20, 1874 Snow, Rev. T., M.A., *St. Mary's, Highfield-street.*
- Nov. 12, 1860 Spence, Charles, 7, *Tithebarn-street.*
- Nov. 18, 1878 Steel, Richard, 18, *Hackins-hey*, EX-PRESIDENT.
- Feb. 19, 1888 Steeves, Gilbert M., 24, *Falkner-street.*
- Oct. 17, 1887 Stookes, Alexander, M.D., *South Dispensary, Upper Parliament-street.*
- Oct. 29, 1888 Stretch, Wm. Knowles, 9, *South Hill-road.*
- April 17, 1886 Tapscott, W. W., 39, *Oldhall-street*, and 41,  
*Parkfield-road, Aigburth.*
- Feb. 18, 1865 Taylor, Geo., 23, *Seel-street.*
- \*Feb. 19, 1865 Taylor, John Stopford, M.D., Aberd., F.R.G.S.,  
*Riverlin, Richmond Park, Lower Breck-road.*
- Oct. 18, 1886 Thompson, I. C., *Woodstock, Waverley Road, Sefton Park.*
- Oct. 21, 1878 Thompson, J. W., B.A., Lond. and Victoria, 22,  
*Lord-street.*
- Oct. 30, 1882 Thomson, W. J., *Exchange-Buildings*, and *Ghyll-bank, St. Helens.*
- \*Dec. 4, 1876 Torpy, Rev. Lorenzo, M.A., *Setubal.*
- \*Feb. 19, 1844 Turnbull, James Muter, M.D. Edin., M.R.C.P.,  
*The Spa Hotel, Tunbridge Wells.*
- Oct. 21, 1861 Unwin, William Andrews, 11, *Rumford-place.*
- Oct. 20, 1879 Veevers, Samuel, *Broad Green*, and 12A, *Manchester-buildings, Tithebarn-street.*
- Nov. 15, 1880 Vicars, John, 8, *St. Alban's-square, Bootle.*
- Feb. 19, 1877 Wallace, John, M.D., *Gambier-terrace.*
- Jan. 27, 1862 Walmsley, Gilbert G., 50, *Lord-street.*
- Nov. 17, 1884 Wortley, Wm., *Walton Grange, Walton.*
- Jan. 9, 1865 Walthew, William, 6, *Brown's-buildings*, and  
*Vine Cottage, Aughton.*

- Oct. 30, 1876 Weightman, W. Arthur (Messrs. Weightman,  
Pedder & Weightman), *Water-street*.  
Nov. 18, 1882 Wightman, William, 17, *Park Way*.  
Nov. 2, 1874 Wolf, Jas. O. de (Messrs. T. C. Jones & Co.),  
26, *Chapel-street*.  
Nov. 14, 1870 Wood, John J., 20, *Lord-street*.  
Nov. 18, 1876 Yates, Edward Wilson, 87, *Castle-street*.  
Nov. 2, 1874 Young, Henry, 6, *Arundel Avenue, Sefton Park*.

## HONORARY MEMBERS.

LIMITED TO FIFTY.

- 1.—1836 The Most Noble William, Duke of Devonshire, K.G.,  
M.A., F.R.S., D.C.L., F.G.S., etc., Chancellor  
of the University of Cambridge, *Chatsworth,  
Derbyshire*, and 78, *Piccadilly, London, W.*
- 2.—1838 Sir George Biddell Airy, K.C.B., M.A., LL.D., D.C.L.,  
F.R.S., F.R.A.S., etc., Royal Observatory,  
*Greenwich.*
- 3.—1840 James Nasmyth, F.R.S., *Penshurst, Kent.*
- 4.—1844 T. B. Hall, *Crane House, Yarmouth.*
- 5.—1850 The Rev. Canon St. Vincent Beechy, M.A., Rector of  
*Hilgay, Norfolk.*
- 6.—1851 The Rev. Robert Bickersteth Mayor, B.D., Rector of  
*Frating, Essex.*
- 7.—1861 The Rev. Thomas P. Kirkman, M.A., F.R.S., Rector of  
*Croft, near Warrington.*
- 8.—1865 The Right Rev. T. N. Staley, D.D., late Bishop of  
Honolulu, Vicar of *Crexhall, Staffordshire.*
- 9.—1865 Sir Edward J. Reed, K.C.B., F.R.S., M.P., *Hextable  
Dartford, Kent.*
- 10.—1865 Cuthbert Collingwood, M.A., M.B., F.L.S., 4, *Grove-  
terrace, Belvedere-road, Upper Norwood, Lon-  
don, S.E.*
- 11.—1867 Sir J. W. Dawson, LL.D., F.R.S., etc., Principal  
and Vice-Chancellor of McGill University,  
*Montreal.*
- 12.—1868 Captain Sir James Anderson, 16, *Warrington-crescent,  
Maida Hill, London, W.*
- 13.—1870 Sir John Lubbock, Bart., M.P., F.R.S., etc., *High  
Elms, Farnborough, Kent.*

- 14.—1870 Professor Sir Henry E. Roscoe, M.P., F.R.S., etc.,  
Owens College, *Manchester*.
- 15.—1870 Sir Joseph Dalton Hooker, M.D., F.R.S., etc., *Kew*.
- 16.—1870 Professor Brown Sequard, M.D.
- 17.—1870 John Gwyn Jeffreys, F.R.S., *Ware Priory, Herts*.
- 18.—1870 Professor Thomas H. Huxley, LL.D., F.R.S., etc., 4,  
*Marlborough Place, London, N.W.*
- 19.—1870 Professor John Tyndall, LL.D., F.R.S., etc., Royal  
Institution, *London*.
- 20.—1870 The Rev. Christian D. Ginsburg, LL.D., *Binfield*,  
*Bracknell, Berks.*, Ex-PRESIDENT.
- 21.—1874 Professor Alexander Agassiz, Director of the Museum  
of Comparative Zoology, *Harvard, Cambridge*,  
*Massachusetts*.
- 22.—1874 Professor Frederick H. Max Müller, LL.D., *Oxford*.
- 28.—1874 Sir Samuel White Baker, Pasha, F.R.S., F.R.G.S., etc.,  
*Sandford Orleigh, Newton Abbot, Devonshire*.
- 24.—1877 The Earl of Crawford and Balcarres, F.R.S., Foreign  
Secretary of R.A.S., etc., 9, *Grosvenor-square*,  
*London*.
- 25.—1877 Albert C. N. Günther, M.A., M.D., Ph.D., British  
Museum.
- 26.—1877 Adolphus Ernst, M.D., Principal of the Department of  
Science, Philosophy, and Medicine, University  
of *Caracas*.
- 27.—1877 Dr. Leidy, Academy of Science, *Philadelphia*.
- 28.—1877 Dr. Franz Steindachner, Royal and Imperial Museum,  
*Vienna*.
- 29.—1877 The Rev. H. B. Tristram, M.A., LL.D., F.R.S., Canon  
of *Durham*, The College, *Durham*.
- 30.—1881 H. J. Carter, F.R.S., *The Cottage, Budleigh Salterton*,  
*Devon*.
- 31.—1881 The Rev. Thomas Hincks, B.A., F.R.S., *Stokeleigh*,  
*Leigh Woods, Clifton, Bristol*.
- 32.—1881 The Rev. W. H. Dallinger, LL.D., F.R.S., P.R.M.S.,  
*Ingleside, Lee, London, S.E.*

## CORRESPONDING MEMBERS.

LIMITED TO THIRTY-FIVE.

- 1.—1867 J. Yate Johnson, *London*.
- 2.—1867 R. B. N. Walker, F.R.G.S., F.G.S., *West Africa*.
- 8.—1868 Rev. J. Holding, M.A., F.R.G.S., *London*.
- 4.—1868 George Hawkins, *Colombo, Ceylon*.
- 5.—1868 J. Lewis Ingram, *Bathurst, River Gambier*.
- 6.—1869 George Mackenzie, *Cebu, Philippine Islands*.
- 7.—1870 The Venerable Archdeacon Hughes-Games, D.C.L.,  
*Isle of Man*.
- 8.—1874 Samuel Archer, Surgeon-Major, *Singapore*.
- 9.—1874 Coote M. Chambers, *Burrard's Inlet, British Columbia*.
- 10.—1874 Edwyn C. Reed, *Santiago de Chili*.
- 11.—1874 Millen Coughtrey, M.D., *Dunedin, Otago, New Zealand*.
- 12.—1875 Robert Gordon, Government Engineer, *British Burmah*.
- 18.—1877 Edward Dukinfield Jones, C.E., *Sao Paulo, Brazil*.
- 14.—1877 Miss Horatio K. F. Gatty, *Altrincham*.
- 15.—1877 Dr. Allen, *Jamaica*.
- 16.—1877 Dr. George Bennett, *Sydney*.
- 17.—1877 Dr. David Walker, *Benicia, U.S.A.*
- 18.—1888 Wm. Henry Finlay, *Cape Town Observatory*.
- 19.—1884 Rev. W. G. Lawes, *New Guinea*.
- 20.—1884 A. W. Crawford, *Oakland, California*.
- 21.—1884 John Greenwood, Mining Engineer, *Melbourne*.
- 22.—1884 Robert Abraham English, *Simla*.
- 28.—1887 Rev. S. Fletcher Williams, *The Limes, 20, Hunter's  
Lane, Birmingham*.

## ASSOCIATES.

## LIMITED TO TWENTY-FIVE.

- 1.—Jan. 27, 1862 Captain John H. Mortimer, "America."  
(Atlantic.)
- 2.—Mar. 24, 1862 Captain P. C. Petrie. (Atlantic.)
- 3.—Feb. 9, 1863 Captain John Carr, ship "Scindia." (Calcutta.)
- 4.—Feb. 9, 1863 Captain Charles E. Price, R.N.R., ship  
"Cornwallis." (Calcutta and Sydney.)
- 5.—April 20, 1863 Captain Fred. E. Baker, ship "Nippon."  
(Chinese Seas.)
- 6.—Oct. 31, 1864 Captain Thomson, ship "Admiral Lyons."  
(Bombay.)
- 7.—April 13, 1865 Captain Alexander Cameron, ship "Staffordshire."  
(Shanghai.)
- 8.—Dec. 11, 1865 Captain Walker, ship "Trenton."
- 9.—Mar. 23, 1868 Captain David Scott.
- 10.—Oct. 5, 1868 Captain W. H. Cawne Warren, ship "Bedfordshire."
- 11.—April 7, 1884 Captain G. Griffith Jones, barque "Hermine."
- 12.—Dec. 13, 1886 Captain W. C. Seabrook, Liskeard, ship  
"Lord Lytton."

**LIST OF BOOKS**  
**PRESENTED TO THE SOCIETY'S LIBRARY DURING THE**  
**SEVENTY-SEVENTH SESSION, 1887-88.**

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A.

- Academie Royale, Copenhagen. Bulletin, October, 1887, to March, 1888.
- Anthropological Institute of Great Britain and Ireland. Journal, February, 1887, to August, 1888.
- Antiquaires du Nord, Société des, Copenhagen. Memoires, 1887.
- Antiquaries, Society of, London. Proceedings, November, 1885, to March, 1888.
- Archæological and Natural History Society, Somersetshire. Proceedings, 1885-87.
- Architects, Royal Institute of British. Journal of Proceedings, March, 1887, to August, 1888; Transactions, vol. iv; Kalendar, &c.
- Arts, Society of. Journal, to date.
- Arts, Royal Scottish Society of. Transactions, xi-4, xii-1.
- Asiatic Society, Royal, of Great Britain and Ireland. April and October, 1887.
- Asiatic Society, Royal, Bombay Branch. Professor Peterson's Report; Index.
- Asiatic Society of Bengal. Journal, nos. cclxxii-cclxxvii; Proceedings, December, 1886; June, July, August, 1887.
- Association, American, for the Advancement of Science. Report, New York Meeting, 1887.

- Association, British, for the Advancement of Science. Report, Birmingham Meeting, 1886; Manchester Meeting, 1887.
- Astronomical Society, Royal. Monthly Notices, March, 1887, to date; Memoirs, xlix-l.
- Astronomical Society, Liverpool. Journal, to date.
- Astronomical Observations, Washington, for 1888.

## B.

- Botanical Society, Edinburgh. Transactions and Proceedings, vol. xxvi-8, xxvii-1.
- British Museum. Catalogue of Birds, vol. xii; Catalogue of Fossil Mammalia, parts iv and v; Catalogue of Lizards, vol. iii, 2nd edition; General Guide; Guide to Galleries of Geology and Palæontology; Guide to Galleries of Reptiles and Fishes; Guide to Shell and Starfish Galleries.

## C.

- Canada, Royal Society of. Proceedings, 1885-86.
- Canadian Institute, Toronto. Proceedings, April, 1888; Report for 1887.
- Chemical Society. Journal and Abstracts of Proceedings to date.

## E.

- Earthquakes, List of California, by E. S. Holden, LL.D.
- East India Association. Journal, April, 1887, to date.
- Emulation, Société d', Abbeville. Memoires, 1881-86.
- Engineers, Institute of Civil. Minutes of Proceedings, vols. lxxxviii-xciii; Charters; Indexes, &c.
- Engineers, Chief of, U.S. Army. Report, 1886-87, 7 vols.
- Engineering Society, Liverpool. Transactions, 1885, to date; Report, &c., 1887.
- Engineers and Shipbuilders in Scotland, Institute of. Transactions, 1885-86.

- Ethnology, Bureau of, Smithsonian Institute. Vol. iv.  
 Expedition, 1779, General John Sullivan's Indian.  
 Exploration Internationale des Régions Polaires, 1882-84; Expédition  
 Finlandaise, tome ii.

F.

- Fossil Mammalia, Glossary of, by J. E. Gore.  
 Fossil Woods in Laramie Deposits, by Sir W. Dawson.  
 Franklin Institute, Philadelphia. Journal, to date.

G.

- Geographical Society, American. Bulletin, to date.  
 Geographical Society, Royal, of Australasia, Queensland Branch.  
 Proceedings and Transactions, 1886-87.  
 Geographische Gesellschaft, Kaiserliche, Vienna. Mittheilungen,  
 1887.  
 Geological Society. Quarterly Journal, May, 1887.  
 Geological Society, American. Bulletin, to date.  
 Geological Society of Ireland, Royal. Proceedings, vol. xviii-1.  
 Geological Society of Cornwall, Royal. Transactions, vol. xi-1.  
 Geological Society of Edinburgh. Transactions, vol. v-1, 2.  
 Geological Society, Liverpool. Proceedings, 1885-88.  
 Geological Association, Liverpool. Transactions, vols. v-vi-vii.  
 Geological and Polytechnic Society, Yorkshire. Proceedings,  
 1887-88.  
 Geological Survey of India. Records, xx-8-4, xxi-1-2; Memoirs,  
 xxiv-1; Palæontologia Indica, series, 10, iv, 8, series, 18.  
 Geological Survey, U.S. Monographs, x-xi; Annual Report,  
 Sixth; Mineral Resources, 1886.  
 Geologists' Association. Proceedings, May, 1886.  
 Geology of India, Manual of. Part iv.

## H.

Hardwicke's "Science Gossip." To date.

Harvard College. Report, 1886-87.

Harvard Museum of Comparative Zoology. Bulletin, xiii-5-7-8-9, xvi-1; Memoirs, xv; Report, 1886-87.

Harvard University. Bulletin; Commemoration of 150th Anniversary.

Health Report, Liverpool, for 1887.

Health, Massachusetts Board of. Report for 1887.

Historical and Archæological Collections, Montgomery, xl-xli.

## I.

"Imperial Federation," February, 1st 1888.

Irish Academy, Royal. Proceedings, vol. ii-8, vol. iv-6; Transactions, xxix-1-2; Cunningham Memoirs, no. 4.

List of Publications, 1786-1886.

## L.

Lepidopterous Fauna of Lancashire and Cheshire, by Dr. Ellis, part 6.

Library Report, Birkenhead Free, 1887-88.

Library Report, Bootle, 1887-88.

Library, Chicago Newberry. Proceedings of Trustees to January, 1888.

Library and Museum Report, Liverpool Free, 1886-88.

Libraries' Report, Manchester, 1885-86.

Library Report, New York Astor, 1887.

Library Report, New York State, 1884-86.

Linnean Society. Journal, Botany, nos. 148, 152, 155, 160, 162; Zoology, nos. 118, 127, 128, 130, 131, 136, 140; Proceedings; List of Members, &c.

Literary and Philosophical Society, Leicester. Transactions to date; Reports.

- Literary and Philosophical Society, Manchester. Proceedings, vols. xxv-xxvi; Memoirs, vol. xxx.  
 Literary and Scientific Society, Birkenhead. Report, &c., 1885-88; President's Address, 1885.  
 Lunar Theory, A Numerical, by Sir G. B. Airey.

M.

- Medical and Chirurgical Society. Proceedings; Transactions, vol. lxx.  
 Meteorological Society. Hints to Observers.  
 Meteorological Observations, Rousdon, 1886.  
 Meteorological Society, Scottish. Transactions, iii-8-4.  
 Microscopical Society, Royal. Journal, December, 1886; April, June, October, December, 1887.  
 Microscopical Society, Liverpool. Report, &c.  
 Milan, Beale Instituto Lombardo. Rendiconti, vols. xviii-xix; Memoire, vol. xv-4, vol. xvi-1-8.  
 Museum Report, New York State, 1879, 1885-86.  
 Museum Report, Peabody, 1887.

N.

- Natural History. American Museum of. Report, 1887-88.  
 Natural History and Antiquarian Field Club, Bath. Proceedings to date.  
 Natural History, Boston Society of. Memoirs, vol. iv-1-6.  
 Natural History Society and Field Club, Hertfordshire. Transactions to date.  
 Natural History Society, Northumberland, Durham, and Newcastle-on-Tyne; Transactions, viii-2, ix-1.  
 "Naturalist" to date.  
 "Naturalist, American," to May, 1888.  
 Naturalists' Field Club, Belfast. Reports, Proceedings, &c., 1884-1887.  
 Naturalists' Club, Berwickshire. Proceedings, xi-2.

Naturalists' Society, Bristol. Proceedings to date.

Naturalists' Field Club, Liverpool. Proceedings, 1885-86, 1886-87.

Natural Science, Chester Society of. Report, 1886-87, 1887-88.

Natural Sciences, Philadelphia Academy of. Proceedings to date.

Natur- und Heil-kunde, Presburg Verein für. Verhandlungen, 1881-88.

"Nature" to date.

Naturforscher, Kais. Leopoldinisch-Carolinische, Deutsche Akademie der.

### O.

Ordnance, Chief of U.S. Army. Report, 1887.

Observations, Greenwich, 1885.

Observatory Publications, Lick. Vol. i, 1887.

Observations Pluviométriques et Thermométriques de la Gironde.

### P.

Philosophical Society, Birmingham. Proceedings, 1885-86.

Philosophical Society, Glasgow. Proceedings, 1885-86.

Philosophical and Literary Society, Leeds. Report, 1886-87, 1887-88.

Philosophical Society, Philadelphia American. Proceedings to date.

Philomathic Society, Liverpool. Proceedings, 1885-86.

Polytechnic Society, Cornwall, Royal. Report, 1885-87.

Polytechnic Society, Liverpool. Report, &c.

Polytechnique, Paris, École. Journal, 1886.

Physikalisch-ökonomische Gesellschaft, Königsberg. Schriften, 1887.

Physical Society of Edinburgh, Royal. Proceedings, 1886-87.

Psychology, American Journal of. No. 1.

Plymouth Institution. Report and Transactions, 1885-87.

## R.

- Royal Institution of Great Britain. Proceedings.  
 Royal Society. Proceedings, 258.  
 Royal Institution of Cornwall. Journal, ix-1.  
 Royal Society of N.S. Wales. Journal and Proceedings, 1886-87.

## S.

- Sciences, des Lettres et des Beaux-Arts de Belgique, Académie des. Bulletin, vols. ix-xiii; Annuaire, 1886-87; Notices Biographiques et Bibliographiques, 1886.  
 Sciences, Washington National Academy of. Memoirs, vol. iii-2.  
 Sciences, Cherbourg, Société Nationale des. Mémoires, 1887.  
 Sciences, St. Pétersbourg, Académie Impériale des. Bulletin, tome xxxii-2.  
 Sciences Physiques et Naturelles, Bordeaux Société des. Mémoires, tome, ii-2, tome, iii-1.  
 Sciences, Haarlem, Société Hollandaise des. Archives Néerlandaises, tome xxii-2-8.  
 Sciences, New York Academy of. Annals, vol. iv-8-4; Transactions, vol. vi, vol. vii-1-2.  
 Science Students' Association, Liverpool. Report, 1885-86.  
 Scientific Association, Lewisham and Blackheath. Proceedings and Report, 1887.  
 Scientific Writings of Joseph Henry, vols. i-ii.  
 "Scientific News," January 20th, 1888.  
 Smithsonian Miscellaneous Collections, vols. xxviii-xxix-xxx-xxxi.  
 Smithsonian Report.  
 Spencer, Two Papers on Herbert, by Rev. T. P. Kirkman, M.A.  
 Sponges, Monograph on Fresh Water, by E. Potts.  
 Statistical Society, Royal. Journal to date.

## T.

- Trigonometrical Survey of India, vol. iv, A, 1886.

## U.

University, Imperial Japanese, Kalendar, 1887-88.

University, New York State, Regent's Report, 1885-86 ; Historical and Statistical Record, 1885.

## V.

Vetenskaps Societeten, Finska. Bidrag till Kännedom af Finlands Natur och Folk, no. 44.

Victorian Year-Book, 1886-87.

## W.

Welsh National Society, Liverpool. Transactions, 1885-86.

Wissenschaften und Georg-Augusto Universität, Gottingen, Kais. Gesellschaft der. Nachrichten, 1887.

Wissenschaften, Munich, K. B. Akademie der. Mathematisch-physikalische Classe, Abhandlungen xvi-1 ; Philosophisch-Philologische Classe, Abhandlungen xvii-3 ; Gedachtnissrede auf Joseph von Fraunhofer.

Wissenschaftliches Verein, Santiago, Chili, Deutsches. Verhandlungen, heft 5, 6.

Wissenschaften, Vienna, Kais. Akademie der. Berichte ; Naturwissenschaftliche Classe, 20, 25, 1887 ; Philosophisch-Historische Classe, cxii-1-2, cxiii-1-2, cxiv-1 ; Mathematische und Naturwissenschaftliche Classen ; Sitzungsberichte.

## Z.

Zoological Society. Proceedings, November, 1887, to April, 1888.

Zoological Society, Philadelphia. Report, 1887-88.

Zoology of Victoria, Prodromus of, by F. McCoy, F.R.S., &c., 15 parts.

## SOCIETIES, ACADEMIES, AND OTHER INSTITUTIONS

TO WHICH THIS VOLUME IS PRESENTED.

## GREAT BRITAIN AND IRELAND.

<i>Aberdeen</i>	- - -	The Dun-Echt Observatory.
<i>Alnwick</i>	- - -	The Berwickshire Naturalists' Field Club.
<i>Bath</i>	- - -	The Natural Historical and Antiquarian Field Club.
<i>Belfast</i>	- - -	The Naturalists' Field Club.
<i>Belfast</i>	- - -	The Natural History and Philosophical Society.
<i>Birkenhead</i>	- - -	The Free Public Library.
<i>Birkenhead</i>	- - -	The Literary and Scientific Society.
<i>Birmingham</i>	- - -	The Philosophical Society.
<i>Bootle</i>	- - -	The Free Public Library.
<i>Bristol</i>	- - -	The Naturalists' Society.
<i>Buckhurst Hill</i>	- - -	The Epping Forest Naturalists' Field Club.
<i>Chester</i>	- - -	The Society of Natural Science.
<i>Cambridge</i>	- - -	The Cambridge Union.
<i>Dublin</i>	- - -	The Royal Irish Academy.
<i>Dublin</i>	- - -	The Royal Geological Society of Ireland.
<i>Dublin</i>	- - -	The Royal Society.
<i>Edinburgh</i>	- - -	The Botanical Society.
<i>Edinburgh</i>	- - -	The Geological Society.
<i>Edinburgh</i>	- - -	The Meteorological Society of Scotland.
<i>Edinburgh</i>	- - -	The Philosophical Institution.
<i>Edinburgh</i>	- - -	The Royal Observatory.
<i>Edinburgh</i>	- - -	The Royal Physical Society.
<i>Edinburgh</i>	- - -	The Royal Scottish Society of Arts.

<i>Edinburgh</i>	- - -	The Royal Society.
<i>Falmouth</i>	- - -	The Royal Cornwall Polytechnic Society.
<i>Glasgow</i>	- - -	The Philosophical Society.
<i>Glasgow</i>	- - -	The Geological Society.
<i>Glasgow</i>	- - -	The University.
<i>Greenwich</i>	- - -	The Royal Observatory.
<i>Halifax</i>	- - -	The Literary and Philosophical Society.
<i>Hull</i>	- - -	The Literary and Philosophical Society.
<i>London</i>	- - -	The Anthropological Institute.
<i>London</i>	- - -	The Society of Antiquaries.
<i>London</i>	- - -	The Royal Institute of British Architects.
<i>London</i>	- - -	The Society of Arts.
<i>London</i>	- - -	The Royal Asiatic Society.
<i>London</i>	- - -	The Royal Astronomical Society.
<i>London</i>	- - -	The British Association.
<i>London</i>	- - -	The British Museum.
<i>London</i>	- - -	The Chemical Society.
<i>London</i>	- - -	The Royal Geographical Society.
<i>London</i>	- - -	The Geological Society.
<i>London</i>	- - -	The Geologists' Association.
<i>London</i>	- - -	The Institution of Civil Engineers.
<i>London</i>	- - -	The East Indian Association.
<i>London</i>	- - -	The Linnæan Society.
<i>London</i>	- - -	The Meteorological Society.
<i>London</i>	- - -	The Society for Psychical Research.
<i>London</i>	- - -	The Royal Microscopical Society.
<i>London</i>	- - -	The Royal Medico-Chirurgical Society.
<i>London</i>	- - -	The Royal Society.
<i>London</i>	- - -	The Royal Institution.
<i>London</i>	- - -	The Royal Society of Literature.
<i>London</i>	- - -	The Statistical Society.
<i>London</i>	- - -	The Zoological Society.
<i>London</i>	- - -	The Editor of "Nature."
<i>London</i>	- - -	The Editor of the "Journal of Science."
<i>London</i>	- - -	The Editor of "Science Gossip."
<i>London</i>	- - -	The Editor of "The Scientific Roll."

<i>Leeds</i>	- - - -	The Philosophical and Literary Society.
<i>Leeds</i>	- - - -	The Yorkshire Geological and Polytechnic Society.
<i>Leicester</i>	- - - -	The Literary and Philosophical Society.
<i>Liverpool</i>	- - -	The Architectural and Archæological Society.
<i>Liverpool</i>	- - -	The Astronomical Society.
<i>Liverpool</i>	- - -	The Chemists' Association.
<i>Liverpool</i>	- - -	The Engineering Society.
<i>Liverpool</i>	- - -	The Geological Society.
<i>Liverpool</i>	- - -	The Geological Association.
<i>Liverpool</i>	- - -	The Historic Society of Lancashire and Cheshire.
<i>Liverpool</i>	- - -	The Microscopical Society.
<i>Liverpool</i>	- - -	The Naturalists' Field Club.
<i>Liverpool</i>	- - -	The Philomathic Society.
<i>Liverpool</i>	- - -	The Polytechnic Society.
<i>Liverpool</i>	- - -	The Athenæum Library and News Room.
<i>Liverpool</i>	- - -	The Free Public Library.
<i>Liverpool</i>	- - -	The Liverpool Library.
<i>Liverpool</i>	- - -	The Lyceum News Room.
<i>Liverpool</i>	- - -	The Medical Institution.
<i>Liverpool</i>	- - -	The Royal Institution.
<i>Liverpool</i>	- - -	University College.
<i>Manchester</i>	- - -	The Literary Club.
<i>Manchester</i>	- - -	The Literary and Philosophical Society.
<i>Manchester</i>	- - -	Chetham Library.
<i>Manchester</i>	- - -	The Free Public Library.
<i>Manchester</i>	- - -	Owens College.
<i>Newcastle-on-Tyne</i>	-	The Natural History Society of Northumberland and Durham.
<i>Oxford</i>	- - - -	The Ashmolean Society.
<i>Oxford</i>	- - - -	The Union Society.
<i>Penzance</i>	- - - -	The Royal Geological Society of Cornwall.
<i>Plymouth</i>	- - - -	The Plymouth Institution.
<i>Taunton</i>	- - - -	The Somersetshire Archæological Society.
<i>Truro</i>	- - - -	The Royal Institution of Cornwall.

<i>Watford</i>	- - -	The Hertfordshire Natural History Society and Field Club.
<i>Welshpool</i>	- - -	The Powys-Land Club.
<i>Whitby</i>	- - -	The Literary and Philosophical Society.

## BRITISH COLONIES AND THE UNITED STATES.

<i>Bombay</i>	- - -	The Royal Asiatic Society.
<i>Boston</i>	- - -	The American Academy of Arts and Science.
<i>Boston</i>	- - -	The Massachusetts Board of Education.
<i>Boston</i>	- - -	The Massachusetts Board of Health, Lunacy, and Charity.
<i>Boston</i>	- - -	The Natural History Society.
<i>Boston</i>	- - -	The Public Library.
<i>Buffalo</i>	- - -	The Society of Natural Sciences.
<i>Calcutta</i>	- - -	The Asiatic Society of Bengal.
<i>Calcutta</i>	- - -	The Geological Survey of India.
<i>Cambridge (Mass)</i>	-	Harvard University.
<i>Cambridge (Mass)</i>	-	Museum of Comparative Zoology.
<i>Cambridge (Mass)</i>	-	The Peabody Museum of American Archaeo- logy and Ethnology.
<i>Chicago</i>	- - -	The Public Library.
<i>Davenport</i>	- - -	The Academy of Natural Sciences.
<i>Melbourne</i>	- - -	The Royal Society of Victoria.
<i>New Haven</i>	- - -	The Connecticut Academy of Arts and Sciences.
<i>New York</i>	- - -	The Academy of Sciences.
<i>New York</i>	- - -	The Astor Library.
<i>New York</i>	- - -	The American Geographical Society.
<i>New York</i>	- - -	The City University.
<i>New York</i>	- - -	The State University.
<i>New York</i>	- - -	The State Library.
<i>New York</i>	- - -	The American Museum of Natural History.
<i>Otago</i>	- - -	The University.
<i>Ottawa</i>	- - -	Geological and Natural History Survey.

<i>Ottawa</i>	- - -	The Library of Parliament.
<i>Philadelphia</i>	- -	The Academy of Natural Sciences.
<i>Philadelphia</i>	- -	The American Philosophical Society.
<i>Philadelphia</i>	- -	The Franklin Institute.
<i>Philadelphia</i>	- -	The Pennsylvania Board of Public Education.
<i>Philadelphia</i>	- -	The Zoological Society.
<i>Salem</i>	- - -	The American Association for the Advancement of Science.
<i>Salem</i>	- - -	The Essex Institute.
<i>San Francisco</i>	- -	The Lick Observatory.
<i>Sydney</i>	- - -	The Royal Society of New South Wales.
<i>Sydney</i>	- - -	The Department of Mines.
<i>Toronto</i>	- - -	The Canadian Institute.
<i>Washington</i>	- - -	The Department of Agriculture.
<i>Washington</i>	- - -	The Geological and Geographical Survey of the Territories.
<i>Washington</i>	- - -	The Naval Observatory.
<i>Washington</i>	- - -	The Smithsonian Institution.
<i>Washington</i>	- - -	The Department of Ordnance; the Department of the Chief of Engineers; the Department of Agriculture; the Department of the Interior.
<i>Wellington</i>	- - -	The New Zealand Institute.

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 FOREIGN.

<i>Amsterdam</i>	- - -	L'Académie Royale des Sciences.
<i>Berlin</i>	- - -	Die Akademie der Wissenschaften.
<i>Bordeaux</i>	- - -	La Société des Sciences Physiques et Naturelles.
<i>Brussels</i>	- - -	L'Académie Royale des Sciences, des Lettres, et des Beaux-Arts de Belgique.
<i>Cherbourg</i>	- - -	La Société Nationale des Sciences Naturelles.
<i>Christiania</i>	- - -	The University.
<i>Copenhagen</i>	- - -	L'Académie Royale.

<i>Copenhagen</i>	- - .	La Société Royale des Antiquaires du Nord.
<i>Geneva</i>	- - -	La Société de Physique et d'Histoire Naturelle.
<i>Gottingen</i>	- - -	Die Königliche Gesellschaft des Wissenschaften.
<i>Grieswald</i>	- - -	The University.
<i>Harlem</i>	- - -	La Société Hollandaise des Sciences.
<i>Helsingfors</i>	- - -	La Société des Sciences de Finlande.
<i>Kief</i>	- - -	La Société des Naturalistes.
<i>Königsberg</i>	- - -	Die Königliche Physikalische-ökonomische Gesellschaft.
<i>Milan</i>	- - -	Il Reale Istituto Lombardo.
<i>Munich</i>	- - -	Die Königliche Akademie der Wissenschaften.
<i>Paris</i>	- - -	L'Ecole Polytechnique.
<i>Presburg</i>	- - -	Der Verein für Natur- und Heil-Kunde.
<i>St. Petersburg</i>	- -	L'Académie Imperiale des Sciences.
<i>Stockholm</i>	- - -	L'Académie Royal Suedoise des Sciences.
<i>Strasburg</i>	- - -	La Bibliothèque Municipale.
<i>Strasburg</i>	- - -	Die Kaiserliche Universitäts und Landes-Bibliothek.
<i>Tokio</i>	- - -	The University.
<i>Toulouse</i>	- - -	L'Observatoire Astronomique.
<i>Vienna</i>	- - -	Die Kaiserliche Akademie der Wissenschaften.
<i>Vienna</i>	- - -	Die Geographische Gesellschaft.

# TREASURER'S ACCOUNT, 1886-87.

Dr.	The LITERARY AND PHILOSOPHICAL SOCIETY, in Account with F. W. EDWARDS, Treasurer.	Cr.
1886-87.		
To Cash paid	Royal Institution, two years' rent, (1886-87) ..	£ 40 0 0
"	Printing and Binding Volumes XL and XLI..	154 19 6
"	Stationery Account and Sundries .....	21 8 6
"	Biology Report Account.....	58 6 5
"	Printing Circulars .....	9 17 0
"	Refreshments, &c. ....	21 11 6
"	Attendance .....	1 15 0
"	Editorial Fee .....	10 10 0
"	Librarian's Expenses, &c.....	4 18 0
"	Secretary's .....	16 14 0
"	Treasurer's .....	2 1 6
Balance .....		49 8 1
		<u>£391 8 6</u>
1886-87.		
	Balance from 1885 86, .....	£ 31 9 7
	By Cash from Subscriptions:—	
	9 Arrears .....	£9 9 0
	1 Life Member .....	10 10 0
	3 Entrance Fees, at 10s. 6d. ....	1 11 6
	166½ Subscriptions, at 21s. ....	174 16 6
		<u>196 7 0</u>
	Interest on Dock Bond.....	6 10 6
	Sale of £150 Dock Bond.....	156 7 7
	Sundries.....	0 13 0
	Bank Interest .....	0 1 10
		<u>£391 8 6</u>

Audited and found correct,  
(Signed), B. L. BENAS,  
WILLOUGHBY GARDNER.

# BIOLOGY REPORT ACCOUNT, 1886-87.

Dr.	The LITERARY AND PHILOSOPHICAL SOCIETY, in Account with F. W. EDWARDS, Treasurer.		Cr.	
1886-87.	£	s. d.	£	s. d.
To Cash paid Printing Reports .....	186	14 6	By Cash from Subscriptions .....	40 10 5
" " Printing Circulars, &c. ....	1	6 6	" " Sales .....	39 5 2
	<u>£188</u>	<u>1 0</u>	Balance, transferred to General Account..	58 5 5
			<u>£188</u>	<u>1 0</u>
			Audited and found correct, (Signed), B. L. BENAS	

Audited and found correct,  
(Signed), B. L. BENAS.



PROCEEDINGS  
OF THE  
LIVERPOOL  
LITERARY AND PHILOSOPHICAL SOCIETY.

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ANNUAL MEETING.—SEVENTY-SEVENTH SESSION.

ROYAL INSTITUTION, October 8rd, 1887.

MR. JAMES BIRCHALL, PRESIDENT, in the Chair.

The Minutes of the last Meeting of the previous Session were read and confirmed.

The Honorary Secretary read the following

REPORT.

The past Session of the Literary and Philosophical Society has been marked by some transactions of unusual interest. The co-operation of a large number of the various Societies in holding an Annual Soirée for the last ten years has fostered an idea that they might be drawn into closer union in their general work, and that it might even be possible to combine them into one large association, in which each Society, as a section, should prosecute its own specified objects. The idea was not new. A movement, which will be remembered by the older members, was made in the same direction about five and twenty years ago, and failed through causes which have now ceased to exist. During this interval

the number of Societies has considerably increased, and as intellectual activity keeps pace with the rapid extension of knowledge, the tendency is towards a further increase in the number. This consideration, together with that already mentioned, seems to have revived the desire for more solidarity in the work in which we are all engaged. Suggestions to this effect were brought before the Council, and it was resolved, as a preliminary step, to invite the Presidents and Secretaries of the Associated Societies to a private Conference, for the purpose of exchanging ideas on the subject. This was followed by a General Meeting of the Councils of those Societies, at the Royal Institution. This meeting was held on the 25th of March last, and was attended by about sixty gentlemen, and although the proposed amalgamation was not favourably entertained, the first and third of the following resolutions were carried unanimously, and the second by a large majority :—

1.—That this meeting is in favour of facilitating the working in common of the Libraries of the various Societies gathered in this building, and that for that purpose a Committee be appointed to draw up and submit to the various Councils for their consideration a detailed scheme, after conferring thereon with the Royal Institution.

2.—That the Committee appointed to consider the Library Question be also requested to consider the possibility of providing a room in the Institution in which the periodicals and other literature possessed by the Societies can be consulted.

3.—That the Societies meeting at the Royal Institution be requested to select each two delegates to act on the Libraries Committee.

In pursuance of these resolutions, the Libraries Committee so appointed has held several meetings, and delegates appointed by it have had interviews with a Sub-Committee

of the Royal Institution. The result is that a joint committee, consisting of representatives of the Societies and the Institution, has been formed, and is now engaged upon a scheme by which all the Libraries in the Royal Institution, whether belonging to the Societies or to the Institution itself, can be utilised for the general benefit, and placed in one room where the members can consult them and have accommodation for reading. When this scheme is completed it will be duly brought before the Councils of the Societies concerned, and finally submitted to the members.

It should be observed that, during these transactions, the Committee of the Royal Institution, acting in a public and generous spirit, which deserves acknowledgment in this Report, largely contributed to the furtherance of the objects in view by passing a resolution which declared that "members of the Learned Societies meeting in the building, and the members and students of University College, and, on the introduction of any proprietor, any other respectable person," should be allowed to consult the books of the Institution within the building, subject to such regulations as may be deemed expedient.

The scheme of amalgamation, though not entertained, was not allowed to fall through entirely, and the matter was again brought before the Council in a modified form, when it was resolved, "That a Sub-Committee should be appointed to consider a plan of partial amalgamation with this Society of not more than six Societies; that they should each join it for one Meeting in each Session; and that the said Committee should be empowered to sound the other Societies on the subject."

A private Meeting was accordingly held for the consideration of this proposal, and was attended by representatives of the Architectural, Biological, Astronomical, Chemists', and Geological Societies, together with our own.

Communications were also received from the Historic and Polytechnic Societies. It was then unanimously resolved, "That the proposal of the Literary and Philosophical Society to send an invitation to some of the kindred societies, asking them to co-operate with the Literary and Philosophical Society, each in one of its Meetings during the next Session, be approved."

Some of the Societies have since expressed their willingness to join in this movement, and the Council feel assured that its prosecution will instil fresh vigour into the societies so combining, and be productive of results conducive to their general welfare.

Turning now to the internal affairs of the Society, the Council feel satisfied that the past Session, as regards the Papers that have been read, and the attendances at the Meetings, has been very successful. The Volume of Proceedings has passed through the press, and will be issued to the members on an early day.

Owing to causes which are temporarily affecting the position of all Institutions, the number of ordinary members has somewhat diminished—203 being on the roll last year, and 191 on the present one.

The finances, however, are in a satisfactory condition; and, with a view to the more economical management of these, the Dock Bond has been realised and a banking account opened, and the financial statement now presented by the Treasurer, shows not only a substantial balance in hand, but the liquidation of every demand which can be claimed from the Society at the present moment.

The number of Honorary and Corresponding Members remains the same as when last reported, namely, 33 of the former and 22 of the latter. In addition to these there are 12 Associates, and the complete roll of Members in all classes contains 258 names.

The Report was passed on the motion of Dr. NEVINS, seconded by Mr. UNWIN.

The HONORARY TREASURER next read the Annual Statement of Accounts, which was adopted on the motion of the Rev. H. H. HIGGINS, seconded by Mr. GUTHRIE.

The following Office Bearers were then elected: Vice-Presidents—Isaac Roberts, F.G.S., F.R.A.S., J. Sibley Hicks, F.R.C.S., F.L.S., Professor Herdman, D.Sc.; Hon. Treasurer—Frederick W. Edwards; Hon. Secretary—John Rutherford, LL.B.; Hon. Librarian—R. McLintock.

The following Ordinary Members of Council were also elected; Miss Cradock, L.K.Q.C.P.I., Principal Rendall, M.A., Josiah Marples, Henry Longuet Higgins, Baron L. Benas, Chas. J. English, John W. Hayward, M.D., Wm. A. Unwin, Willoughby Gardner, Professor Bradley, M.A., Gilbert M. Steeves, Malcolm Guthrie, W. Watson Rutherford, and John Newton, M.R.C.S.

The Associates of the Society were re-elected.

Mr. JAMES BIRCHALL, the President-elect, delivered his First Presidential Address, on "The Desirability of a Larger Knowledge of History in Modern Politics."\*

## FIRST ORDINARY MEETING.

ROYAL INSTITUTION, October 17th, 1887.

MR. JAMES BIRCHALL, President in the Chair.

Reference was made by the Rev. H. H. HIGGINS and Dr. NEVINS to the death of Mr. Price, of Chester, and to his valuable labours in the promotion of scientific knowledge.

Dr. Alexander Stookes was duly elected an Ordinary Member.

\* See page 1.

The Rev. H. H. HIGGINS exhibited some rare Plants from the Botanic Gardens (lent by the Curator), and read the following communication upon them :—

Mr. J. Richardson, Curator of the Botanic Gardens has kindly contributed, as on former annual occasions, a selection of plants having a special botanical interest. This year all the specimens belong to the genus *Anthurium*, a name derived from *Anthos*, a flower, and *oura*, a tail. They belong to the *Arum* family; are from the West Indies, Brazil, and Mexico; are epiphytes, or as in Zoology we should say commensalists, not parasites—deriving nourishment from their hosts—but sharing their environmental table; no doubt, in certain cases greatly to the satisfaction of both the host and the guest; at all events a similar relation in Zoology is in several cases evidently highly agreeable. I feel sure that the plants before you are, in a horticultural point of view, worthy of the attention of this Society and of the high character of Mr. Richardson as a successful cultivator and curator. Botanists have characterised the genus as consisting of flowers in possession of tails. The systematic name for an organ of this character is *spadix*, and a very remarkable appendage it is; in fact the flower has a tail with a curious tale. In many species of the genus the tail is an example of a useless organ: *i.e.* it is not put to the purpose for which in the typical species it was important.

In the Dragon Arum, of old fashioned gardens, the *spadix* has the offensive smell of carrion, which attracts the large muscular blow-flies, able to shove themselves between the flower and the spathe. The pistils of the flower are thus fertilized, and the flies perish. How or where the plant gets the chemical composition which smells so exactly like decomposing animal matter, is a marvellous fact. A more philosophical part of this tale of a tail is the mode in which nature turns into very beautiful—as you see before you,

though so far as I know useless—ornament, an organ in which functional value to the plant was attained by the most unscrupulous employment of a method extremely objectionable to the observer in the course of pursuing his experiments. Lindley and Moore report a remarkable amount of heat generated in the flowers of species allied to *Anthurium*: as much as 50° Fahrenheit.

The Rev. H. H. HIGGINS read a Paper "On the Remains of Temperate and Sub-Tropical Plants found in Arctic Rocks."\*

Mr. JOHN W. ELLIS, L.R.C.P., F.E.S., read a Paper on "Notes on the Cooke Collection of British Lepidoptera,"† in the Liverpool Museum, and exhibited several cases of the Collection.

A drawer of interesting Minerals and Gems, selected from his private collection, was exhibited by Mr. F. P. MARRAT. They consisted of some curious Agates, illustrative of the formation of Agates in the respective positions in which they occur in nature. A specimen of a fine coloured and very brilliant Pink Diamond was also exhibited, and several other precious stones were shown and commented upon by the exhibitor.

#### NORTH AMERICAN BATRACHIA.

Mr. T. J. MOORE exhibited from the Aquaria of the Free Public Museum living examples of North American Batrachia, including specimens of *Protonopsis horrida*, the well-known Hell-bender of the Ohio, received in exchange from Mr. Eugene Blackford, U.S. Fish Commissioner, New York; and read the following extracts from American authors as to their distribution, habits, and extreme tenacity of life, as given by Professor E. D. Cope, Ph.D., in his article on

\* See page 103.

† See page 97.

Batrachia, in the *Standard Natural History*, published by Cassino & Co., Boston, 1885.

There are but two genera of the *Protonopsidæ*—*Protonopsis* of North America, and *Megalobatrachus* of Asia. These are salamander-like animals, with four well-developed, but short, limbs.

There are branchial slits in the American genus, but none in the Asiatic form.

There are but two species of *Protonopsis*—*P. horrida* and *P. fusca*, the former generally distributed in the drainage of the Mississippi basin, the latter confined, so far as known, to the southern Alleghany region.

*Protonopsis horrida* is the well-known hell-bender of the Ohio. It is aquatic in its habits, and is frequently caught by fishermen on their set hooks. The following accounts of its habits are given by Messrs. Townsend and Frear, in the *American Naturalist* for Feb. and April, 1882 :—

"The *Protonopsis*, called 'alligator,' and 'water-dog,' is an exceedingly voracious animal, feeding on fish, worms, crayfish, etc.; some of those taken by me disgorged crayfish shortly after being caught. All my specimens were caught in the Loyalhanna creek, Westmoreland county, Philadelphia.

"It is well known to those accustomed to fish in the streams of this region from its troublesome habit of taking bait placed in the water for nobler game. When thus hooked, its vicious biting and squirming, together with the slime which its skin secretes, render it exceedingly disagreeable to handle. It is often hooked in bottom-fishing for catfish. Many anglers cut the hook off rather than extract it, and the amphibian's flat head is often rendered still flatter by a lively application of the sportsman's boot-heel.

"In the early summer, when the water is clear, these water-dogs are often to be seen on the bottom in considerable numbers.

"Once, when fishing with some friends from off a large rock in the Loyalhanna creek, we saw quite a shoal of them moving sluggishly about among the stones on the bottom. They would quickly take our hooks baited with a piece of meat or a fish-head.

"In one instance, two large ones laid hold of the same bait, and were promptly landed on the rock. In a few minutes we had a dozen.

"Last August I fished the same spot for them, but without success.

Acting on the advice of a 'native' (which was to drop some bait—dead fish, etc.—near certain rocks, under which he insisted the 'alligators' stayed), I caught ten large specimens in a single morning, and ten more a few days later. Those taken were of various sizes, measuring from ten to eighteen inches in length. One taken by a friend was twenty-two inches long. Fishermen hereabouts say they have frequently caught hell-benders two feet long.

"They are remarkably tenacious of life. I carried my specimens six miles in a bag behind me, on horseback, under a blazing hot sun, and kept them five weeks in a tub of water without a morsel to eat, and when I came to put them in alcohol, they seemed almost as fresh as ever. During their confinement in the tub, two of the females deposited a large amount of spawn.

"This spawn was something similar to frog-spawn in its general appearance, but the mass had not the dark colours of the latter. The ova were exuded in strings, and were much further apart than frogs' eggs. They were of a yellow colour, while the glutinous mass which connected them had a grayish appearance. The spawn seemed to expand greatly by absorption of water. It lay in the tub among the animals for a week, but was not disturbed by them."

To the above remarks, Mr. Wm. Frear, of the University of Lewisburg, adds:—"The observations on the *Protonopsis* in your February number call to mind several instances of its remarkable vitality which have come under my own observation. One specimen, about eighteen inches in length, which had lain on the ground exposed to a summer sun for forty-eight hours, was brought to the Museum, and was left lying a day longer before it was placed in alcohol. The day following, desiring to note a few points of structure, I removed it from the alcohol, in which it had been completely submerged for at least twenty hours, and had no sooner placed it on the table before it began to open its big mouth, vigorously sway its tail to and fro, and give other signs of vitality.

"On another occasion, desiring to kill one of these creatures, which had been out of water for a day, I made a little slit in the back, hoping to be able to penetrate between the cervical vertebræ with a stout scalpel, and cut the spinal cord. After several trials, in which I succeeded only in breaking the scalpel, I gave up the attempt; but with all my cutting and pushing, it manifested not the slightest signs of pain or irritation, while, if I but touched the tip of its tail with my finger, it would make a vigorous protest by lashing its tail and snap-

ping its jaws. I doubt if even the redoubtable snapping turtle could shew signs of a more rugged constitution."

"The *Megalobatrachus maximus*, of Japan and Thibet, is the largest living batrachian, reaching a length of three feet. It resembles its American ally in proportions and in colour.\*

"The family *Amblystomidae* includes several genera, of which *Amblystoma* is characteristic of North America and Mexico, where fifteen species are found.

"The *Amblystomata* vary in size, from only two inches in length (*A. conspersum*), to a foot in length (*A. tenebrosum*). The species prefer damp climates.

"Thus five of them are found on the Pacific coast, and ten east of the plains, while but a single species ranges over the intervening dry region of the plains and the Great Basin. This one is the *A. tigrinum*, which ranges over the entire continent, and southward on the Mexican plateau as far as the city of Mexico. The species differ in the period at which they undergo their metamorphosis.

"Most of the eastern species reach the adult state while yet of small size, but the *A. tenebrosum*, of Oregon, becomes quite large before changing.

"The *A. tigrinum* delays its metamorphosis for the longest period, and can be prevented from completing it by continued submergence in the water. Another species, the *A. maculatum*, of the Mexican lakes, is not known to leave the larval state. Although it has often been affirmed that this change takes place, on examination it has always turned out that the species observed is the *A. tigrinum*. The *A. maculatum* is the *axolotl* of the Mexicans, and is used by them as an article of food. It is probably edible, like the *Protonopsis horrida*, which I have found to be excellent.

"The following notes on the *Amblystoma tigrinum* refer to a specimen from New Jersey, of about a foot in length, which I kept for some months in a fernery in my study. It is nocturnal in its habits, and remained during the day in its burrow. This extended through the long diameter of its prison, and had three outlets, which it kept open. From one of them, as evening approached, it projected its head and watched with attention what was going on in the room. The *punctatum*, which I have also kept in confinement,

of this, the Giant Salamander, mounted by Mr. E. Gerrard, led,

has similar habits. When handled, it may eject a stream of transparent fluid, like a toad. I made the following observation on the habits of the *A. tigrinum*, at some ponds in Idaho Territory, twelve miles north of the Market Lake. On the shore I found several specimens in various stages of transition from the larval condition. They mostly presented stumps of the branchial processes, with a greater or less degree of atrophy of the fimbriæ. These animals occupied holes the size and shape of their bodies, excavated vertically in the sand, from which their heads protruded. They were so situated as to be overflowed by every slight change of level of the water, which also kept their holes full. This situation was especially adapted to a state of transition from a branchial to a pulmonary respiration."

Mr. R. McLINTOCK read a Paper on "Lake Lahontan, an Extinct Quaternary Lake of North-west Nevada, U.S.A."\*

## SECOND ORDINARY MEETING.

ROYAL INSTITUTION, October 31st, 1887.

MR. JAMES BIRCHALL, PRESIDENT, in the Chair.

Miss Rich and Messrs. Osmund W. Jeffs, Alexander Brysson, and Thomas Nicholson were duly elected Ordinary Members.

Mr. WALTHER exhibited and described a Bat from Japan.

The Rev. H. H. HIGGINS exhibited some Engravings, in which were shewn crystallisation in the fats of butter obtained by Mr. Thomas Taylor, of Washington, U.S.A.

The PRESIDENT exhibited a Photograph of a Chalice used by Dr. Lingard, at Hornby, in North Lancashire.

Rev. THOMAS P. KIRKMAN, M.A., F.R.S., read a Paper "On Mr. H. Spencer's Conquest of the Problem of the Universe." †

\* See page 339.

† See page 39.

## THIRD ORDINARY MEETING.

ROYAL INSTITUTION, November 14th, 1887.

This Meeting took the form of a Joint Meeting of this Society and the Liverpool Astronomical Society.

MR. JAMES BIRCHALL, PRESIDENT, in the Chair.

Mr. Richard Eastley was duly elected an Ordinary Member.

Mr. HERBERT SADLER, F.R.A.S., read a Paper on "Celestial Photography," illustrated by photographs.\*

Mr. W. H. DAVIES read a Paper by Mr. W. H. S. MONCK, M.A., F.R.A.S., on "The Causes of Variation in the Light of Stars."\*

Mr. McMILLAN read a Paper by Mr. W. F. DENNING, F.R.A.S., on "Illustrated Notes on the Planets—Venus."\*

Mr. R. C. JOHNSON read a Paper by Mr. J. E. GORE, F.R.A.S., M.R.I.A., on "Distribution and Colours of the Binary Stars."\*

## FOURTH ORDINARY MEETING.

ROYAL INSTITUTION, November 28th, 1887.

MR. JAMES BIRCHALL, PRESIDENT, in the Chair.

Mr. W. H. DAVIES, F.R.A.S., was duly elected an Ordinary Member.

Mr. R. C. JOHNSON made a communication upon the Clock at Westminster.

\* These papers will be found in the *Journal of the Liverpool Astronomical Society*, Vol. VI, Part II, December, 1887.

Rev. THOMAS P. KIRKMAN, M.A., F.R.S., read a Paper "On the three Zeros Necessary, *A Priori*, and Transcendental; or—an Enquiry into the Philosophical Value of the word Necessity, used without an If implied or expressed." \*

### FIFTH ORDINARY MEETING.

ROYAL INSTITUTION, December 12th, 1887.

MR. EDWARD DAVIES, Past-President, in the Chair.

Rev. S. Fletcher Williams was elected a Corresponding Member.

Mr. FREDERICK W. EDWARDS read a Paper on "Industrial Education." †

### SIXTH ORDINARY MEETING.

ROYAL INSTITUTION, January 9th, 1888.

MR. JAMES BIRCHALL, President, in the Chair.

Rev. H. H. HIGGINS read a short Paper "On the Life and Letters of Charles Darwin," Vol. I. †

Mr. T. J. MOORE exhibited, by the kind permission of Major Gaskill, High Cliff, Woolton, a case of New Zealand Birds, containing a remarkably fine and large specimen of Apteryx.

Mr. J. F. HEYES, M.A., F.R.G.S., read a Paper on "The Significance of Geography to the Nation."

\* See page 71.

† See page 257.

‡ See page 191.

PROCEEDINGS.

SEVENTH ORDINARY MEETING.

ROYAL INSTITUTION, January 23rd, 1888.

MR. JAMES BIRCHALL, PRESIDENT, in the Chair.

Mr. C. E. BEWSHER, of Mauritius, read "A Few Notes on the Seychelles Islands and the Coco de Mer," illustrated by Coloured Drawings by the late General C. G. Gordon, C.B.

Rev. S. FLETCHER WILLIAMS read a Paper, "Fiction as an Education."

EIGHTH ORDINARY MEETING.

ROYAL INSTITUTION, February 6th, 1888.

MR. JAMES BIRCHALL, PRESIDENT, in the Chair.

Mr. JOSIAH MARPLES, the PRESIDENT, and Mr. UNWIN, referred to the death of Professor Hayden, one of the Honorary Members, and also to the death of Dr. Asa Gray.

Rev. H. H. HIGGINS read the second of his short Papers "On the Life and Letters of Charles Darwin," Vol. II.\*

Mr. WILLOUGHBY GARDNER read a Paper "The Celtic Religious College at Bangor on the Dee."†

\* See page 198.

† See page 199.

# NINTH ORDINARY MEETING.

ROYAL INSTITUTION, February 20th, 1888.

MR. JAMES BIRCHALL, PRESIDENT, in the Chair.

Mr. G. H. BALL communicated some Supplemental Notes to a Paper on "The Water Supply of Wallasey," read before the Society on 15th December, 1884, and some observations on the Water Supply of Liverpool.

Dr. J. BIRKBECK NEVINS read a Paper "On some Curiosities of English Coinage,"\* illustrated by drawings and coins.

# TENTH ORDINARY MEETING.

ROYAL INSTITUTION, March 5th, 1888.

MR. JAMES BIRCHALL, PRESIDENT, in the Chair.

Dr. NEVINS exhibited a Sovereign of the reign of Charles I, coined in Welsh gold, and a Coin Token.

Mr. BARON L. BENAS exhibited and communicated details about a Japanese Newspaper.

Mr. RICHARD STEEL read a Paper on "Epigrammatic Literature." †

# ELEVENTH ORDINARY MEETING.

ROYAL INSTITUTION, March 19th, 1888.

MR. JAMES BIRCHALL, PRESIDENT, in the Chair.

Rev. H. H. HIGGINS exhibited from the Free Public

\* See page 285. † See page 161.

Museum a remarkably fine specimen, preserved in spirit, of a large Sea-pen, *Pennatula borealis*, lately received in exchange from the Bergen Museum.

Rev. H. H. HIGGINS, read the third of his short Papers "On the Life and Letters of Charles Darwin," Vol. III.\*

Mr. E. R. RUSSELL read a Paper on "*The Merchant of Venice*—the Minor Characters."†

## TWELFTH ORDINARY MEETING.

ROYAL INSTITUTION, April 9th, 1888.

MR. JAMES BIRCHALL, PRESIDENT, in the Chair.

References were made by the PRESIDENT, Rev. H. H. HIGGINS, Mr. HENRY YOUNG, and Mr. COWELL, to the recent death of the Rev. Charles Beard, LL.D.

Rev. H. H. HIGGINS read a Paper "On the Individuality of Atoms and Molecules."‡

## THIRTEENTH ORDINARY MEETING.

ROYAL INSTITUTION, April 16th, 1888.

MR. JAMES BIRCHALL, PRESIDENT, in the Chair.

References were made by the PRESIDENT, Rev. H. H. HIGGINS, and Principal RENDALL, to the recent death of Mr. Matthew Arnold.

Reference was made by Mr. HENRY YOUNG to the recent death of Mr. Richard Lowndes.

Mr. J. M. McMASTER read a Paper on "Did Francis Bacon write the Shakespeare Plays."

\* See page 196.

† See page 129.

‡ See page 227.

## FOURTEENTH ORDINARY MEETING.

ROYAL INSTITUTION, April 30th, 1888.

MR. JAMES BIRCHALL, PRESIDENT, in the Chair.

## PTEROPUS DASYMALLUS.

Mr. T. J. MOORE exhibited a stuffed specimen of a large Fruit Bat, from Yokohama, presented to the Museum by Mr. W. Walthew. It appears to be the *Roussette laineuse*, *Pteropus dasymallus* of Temminck, described and figured by him in his *Monographies de Mammalogie*, I, p. 180, Pl. 10 (1827), and is rare in collections, two skins and a skull only being enumerated in the Catalogue of the Cheiroptera in the Collection of the British Museum, by George Edward Dobson, M.A., M.B., 1878, p. 25. It is remarkable for its long and woolly fur on all parts except on the face.

Mr. T. R. Green, a Liverpool gentleman long resident in Japan, from whom Mr. Walthew received the bat, has since supplied the following information respecting it:—  
“Common in the Bonin Islands, about 600 miles south of Yokohama, and under Japanese protection. The islanders make pets of them. On the mainland, if the Japanese islands may be so-called, these bats are scarce, and it is doubtful whether they migrate for the fruit season or get blown away by the southerly gales and are unwilling visitors. Their flight is steady, and about dusk could easily be mistaken for that of crows. It is doubtful if they breed in Japan proper. The specimen came into a room at Frijisawa (a great place for melons) twelve miles from Yokohama, and was captured without difficulty.”

## CHLAMYDOPHORUS.

Mr. T. J. MOORE exhibited from the Free Public Museum

a fine male specimen, preserved in spirit, of the very rare little Edentate mammal, *Pichiciego*, or *Chlamydophorus truncatus*, from Mendoza, in the Argentine Republic, recently presented by Mr. Anthony Libert, of Buenos Ayres, as announced in the following letter :—

BUENOS AYRES,

10th January, 1888.

DEAR SIR,

You will perhaps remember me calling on you with a card of my friend Mr. Dukinfield Jones, in August, 1885, when I had the pleasure of your escort through the Museum, and spent a profitable and very pleasant hour.

On that occasion I promised I should send to you a specimen of the little mailed animal *Chlamydophorus truncatus*, or "Pichiciego," found in Mendoza, in this Republic, and, after a good deal of trouble, I have at last succeeded in obtaining what I think a very perfect specimen, which I now have the pleasure of forwarding to you.

I hope it will arrive safely and be of use to you. I shall be glad to hear from you, and be pleased also in giving you any information relating to this country, and to the large number of fossil remains which are found here frequently. It will interest you to know that a complete *Megatherium* has lately been dug out of the banks of an "arrago" (marshy drainage), not thirty leagues from this city, and that it is in a good state of preservation. With kind regards.

I am, faithfully yours,

ANTHONY LIBERT.

Mr. T. J. Moore.

This singular little mammal was first described by Dr. Harlan, from a specimen in the Philadelphia Museum.\* A specimen from Sir Woodbine Parish in the Museum of the Zoological Society of London, was skeletonised by Yarrell, who figured it in the *Zoological Journal* about 1825. Another specimen from Sir Woodbine Parish enabled Dr. Gray to discover that Yarrell, for fear of injuring the skin,

\* *Acad. Lyc. Nat. Hist., New York, 1825.*

had not fully dissected out the wonderful shield attached to the pelvis.

It was not till some ten years ago that we obtained an example for the Liverpool Museum. The skin of this was efficiently stuffed and the skeleton mounted by Mr. E. Gerrard, Jun. The specimen now received from Mr. Libert will admit of further preparations, as the bones of the limbs, vertebra, etc., being mounted for the comparative series of osteology.

The singularity of form and structure of this remarkable creature have secured it a place in all text-books, notwithstanding its diminutive size, which barely exceeds that of the common mole, yet little or nothing was known of its habits for more than half a century after its discovery, owing to its very limited and remote habitat. The world is indebted for almost all that is recorded of the habits of the *Pichiciego* to a young and most promising naturalist, Mr. E. W. White, F.Z.S.L., of Buenos Ayres, whom I had the pleasure of becoming acquainted with during his preliminary sojourn in England to prepare himself for scientific exploration in South America, and whose lamented death, due to professional zeal in medical study at Philadelphia, I shall not cease to deplore.

In the *Proceedings of the Zoological Society of London*, for 1880, pp. 7-11, will be found Mr. White's "Notes on *Chlamyphorus truncatus*," and in his *Cameos from the Silver Land, or the Experiences of a Young Naturalist in the Argentine Republic*, published in two volumes, by Van Voorst, London, 1881, his observations will be found in narrative form. These being less generally accessible I take the liberty of quoting:—

"I had long had a desire to investigate the habits, structure, and home of that beautiful little plantigrade aberrant member of the Armadillo family, the *Chlamyphorus truncatus* or *Pichiciego* (little

blind animal). Its range, I discovered to be, in latitude from 31° S. to 34° S., that is, from the Valley of Zonda, in the province of San Juan, down to San Rafael, seventy leagues south of Mendoza; and in longitude, from the city of San Luis, which lies on exactly the same parallel as Mendoza, to the Andes. A remarkably characteristic feature of the landscape of this region, and the one that mainly determines the habitat of our silky little friend, is the *Médanos* (sand-dues), which, from ten to thirty feet high, and studded with stunted vegetation, extend in nearly a meridional chain; they are not unfrequently met with in other parts of the Republic, but only occur in cadenic array in Mendoza and San Juan. I therefore determined to cut into the centre of this zone, in which are likewise found three species of true *Dasypodidæ*; but to accomplish this a ride of forty leagues was necessary, from Mendoza to the neighbourhood of La-Paz; and this I undertook in the month of August.

"For six days then, accompanied by a large number of men, a diligent search was prosecuted for this tiny *Chlamydophorus truncatus* (truncated cloak-bearer), which bears the appearance of an animal cut in two, so that its posterior is flattened, from which at the bottom springs a rigid tail, for all the world like a pump-handle, and the head, back, and truncated end, as its name indicates, are covered by a beautiful pinkish horny shield.

"I was fortunate enough to secure one living specimen which, in spite of the utmost attention and care, survived capture only three days; in fact, like the lovely humming birds, the Pichiciego droops rapidly in captivity, and has never been known to live longer than eight days in that state.

"That both these delicate creatures succumb under the tenderest hand of man, the same causes may be assigned; the absence of any certain knowledge as to their food, or the temperature suitable.

"An inspection of the dental system of the *Chlamydophorus* clearly indicates the *Coleoptera* as its prey, a conclusion which is rendered all the more probable by their abundance in the neighbourhood of its burrow. My solitary specimen was fed on milk, which it lapped like a cat, and on introducing by artifice some tiny pieces of chopped meat into its mouth, these it did not reject. So extremely sensitive, however, is this little mail-clad burrower to cold that, after passing the night in a box of earth covered with flannels, it was found the following morning in a very exhausted state, but, wrapped in warm envelopes, and placed near a fire, quickly recovered. On taking it into my hands under a

warm Mendoza sun, it shivered violently, but whether through chill or fear, it is impossible to say. Its normal paradise appears to be, when the temperature of its sandy dwelling is such as almost to scorch the hand.

"When walking, the *Chlamydophorus* plants both the fore and hind feet flat on the soles, and not on the contracted claws, as is the case with the ant-eater, and carries its inflexible tail, which it has no power to raise, trailing along the ground. Sluggish in all its movements, except as a fodient, in which capacity it perhaps excels all other burrowing animals, the *Chlamydophorus* performs the operation of excavation with such celerity, that a man has scarcely time to dismount from his horse before the creature has buried itself to the depth of its own body. As it commences to excavate, the forefeet are first employed, and immediately afterwards supporting its body on the firm tripod afforded by these and the extremity of the tail, both hind feet are brought into play simultaneously, discharging columns of sand with incredible swiftness.

"My solitary living representative I placed first on brick, and then on wooden flooring, but knowing it could not burrow in these, it merely walked round and round in irregular circles, an evidence of the very great or total deprivation of the power of vision, at any rate during daylight; but far different was its behaviour on being transported to the exposed soil where, after a preliminary and very audible dog-like sniffle or two, indicating keen scent, it set to work immediately to delve at a very rapid rate.

"The light fine sand in which the Pichiciego burrows proclaims unmistakably its presence, as well as that even of the minutest animals, by the tracks left: the fox, the cat, the beetle, the spider, etc., are thus equally betrayed.

"The natives are apt observers, and even from the saddle will decipher and distinguish at a glance the various footprints and unerringly detail the animals that have passed any assigned spot during the night. With regard to our elegant little subject, there is no mistake. Besides the impressions of the four feet, the inclined stiff tail leaves its central deep fosse. Of course, after rain, which falls but seldom, the indentations are accentuated, and the only sure way of effecting a capture is to follow them, as they lead directly to a small hillock of sand, by removing which, the entrance to the tunnel is exposed to view and the host usually found at home; and if the tracks were numerous, the animal would no longer be rare; but

it is a fact that years sometimes elapse without any trace of its existence."

In 1863, Prof. Burmeister, of Buenos Ayres, described and figured a second and larger species, under the name of *Chlamydophorus retusa*, from Santa Cruz de la Sierra, Bolivia, examples of which are *great desiderata* in the Liverpool Museum.

These two species form one of the most isolated groups of placental mammalia.

Dr. J. E. Gray subsequently recorded the second species as a new genus, *Burmeisteria retusa*. For references to this, see *Proceedings of the Zoological Society of London*, 1865, p. 382; and for papers by Dr. M. Watson, Professor of Anatomy, Owens College, on the Anatomy of *Chlamydophorus*, see the same *Proceedings* for 1878, pp. 678-679, where references to anatomical papers by Garrod, Macalister, and Atkinson are also given.

Mr. E. R. RUSSELL read a Paper on "Matthew Arnold."\*

Dr. NEWTON read a Paper on "Is Thought possible without Words?—a discussion on Max Müller and Darwin."†

\* See page 215.

† See page 345.

## ON THE DESIRABILITY OF A LARGER KNOWLEDGE OF HISTORY IN MODERN POLITICS.

By JAMES BIRCHALL,

PRESIDENT.

THE tolerant spirit which pervades the proceedings of the Literary and Philosophical Society encourages me to believe that I may, without apology, address you on matters bearing upon the politics of the day.

Our Society has acquired wisdom with age. While carefully prohibiting the introduction of questions of a sectarian and controversial character, its laws have long been interpreted in a large and catholic spirit, and polemical questions can now be discussed, as to their philosophical foundation, without the irritability which polemics too often arouse. Philosophy indeed, as the Schoolmen used to say, is the handmaid of theology—and of politics also; and in pursuing the study of the first, which is one of our professed objects, we are bound at times to be drawn into the consideration of the other two.

Throughout all our discussions we are animated with a simple and earnest desire to find the truth—to certify all questions by reason and unimpeachable testimony. In this acquisition of knowledge we disdain the affectation of the of the pedant, whose learning has no apparent influence upon the affairs of men. Professor Freeman, in one of his Oxford lectures, mentions the case of a great mathematician who was said to have made a discovery, the great beauty of which was that it could never be of the slightest use to anybody. He cites this as an example of the truest scientific spirit, and of the genuine love of knowledge for its own sake.\*

\* "Lectures on Methods of Historical Study," p. 44

And, doubtless, as members of a society which claims to be learned, and has done service to warrant its claim, we desire, in the first instance, to increase the sum of human knowledge, to work for the love of investigation and discovery, and the pleasure of overcoming difficulties. But then we are also practical men, actively engaged in the multifarious occupations of human industry, and accustomed to take utilitarian views of the pursuits we adopt.

When the literature and philosophy of ancient Greece dawned upon Western Europe in the age of the Renaissance, thoughtful minds revolted against the scholastic puerilities which had imposed upon men's intelligence during the greater part of the Middle Ages. Knowledge received a new birth. A new school of thinkers arose who turned away from the study of theological metaphysics, and, devoting their attention to subjects of present human interest, received the name of *Humanists*. Such a title we also may claim, since we consider the matters brought under our notice, with a view to their worth and the service they will render in the improvement and amelioration of men.

If these remarks rightly interpret the spirit in which our work is conducted, the subject of my address will commend itself to your attention, because of its practical bearing, though my treatment of it may fall short of your expectations.

I submit then for your consideration some reasons and illustrations to show the desirability of a larger knowledge of history in the study and practice of modern politics, and the need of it especially on the part of those who have recently succeeded to the control of the national affairs.

All Englishmen take an intense interest in politics; but few, I imagine, go to the trouble of basing their political convictions on a knowledge of the politics of the past—that is, on history. I have not in my mind the Cecils, the

Cavendishes, and the Russells, to whom we may allow a prescriptive right to inherit the opinions of their fathers along with their ancestral estates. My remark is confined to the great mass of the electorate—the democracy as it is conveniently named—and I apprehend that with them political principles are not the outcome of historical information. The reason of this is not far to seek. The daily publication of the Parliamentary debates, the frequent outbursts of political oratory, and the perpetual struggle between the majority which governs and the minority which believes it could govern better, lend all the excitement of warfare to political discussion.

In the midst of all this passionate controversy the mass of the people either lack the ability, or are too much occupied, to trace back for themselves the history of a great question, or to master the facts and the logical processes which are requisite for the formation of an honest opinion. Such historical knowledge as they gained at school was too narrow and flimsy to make a foundation on which they could afterwards build, and they have had, moreover, little leisure to remedy the defect since. The result is that they turn for intelligence and guidance to the leading articles of their favourite newspaper, and the speeches of great popular leaders. Such *ex-parte* statements generally present only those arguments which are best adapted to justify the views of the party whose interests are advocated. And since it is the ignorant who are most easily misled, the mode in which a question is so presented is too readily taken for granted as the only true one. It is this one-sided study of political matters which strengthens the prejudices and antipathies of party warfare, and creates partisans of the narrowest type. It is totally adverse to the development of an unbiassed judgment, or to the cultivation of respect for an opponent's opinion. Without the application of history to our political

controversies, the latter become degraded into a mere struggle of interests and parties. "Divorced from history," observes Professor Seeley, "politics are vulgar, and when history loses sight of its relation to politics, it fades into mere literature."\*

But apart from these considerations, it is evident that the man who essays to play even the humblest part of a citizen, or who desires to take an intelligent share in the politics of his time, is bound to qualify himself for the duty he voluntarily assumes, by at least endeavouring to learn how he has come to be the citizen of a great community. During the process of so informing himself, he will feel that his judgment is being gradually strengthened, and that he is less and less disposed to take things for granted, or to prejudge any question submitted to his opinion. He will feel that his mind is being trained to approach subjects of political discussion with moderation and caution; he will find himself growing more critical than formerly, and that he has become possessed of a habit of weighing conflicting arguments with greater fairness.

These benefits will follow, because he will be mainly occupied in the study of those periods of our history, which are free from political controversy—when all the things that we most highly value in modern politics took their root and sprang into life, and political theories and principles of government had not as yet given rise to party conflict. And in further prosecuting his enquiries, he will learn how the men of each particular age differed in their ideas of events which, in our modern conceptions, admit of but one interpretation. He will see how good and evil, wisdom and folly, were pretty equally divided between opposing factions; how the most illustrious leaders and the noblest causes were not untainted, and the malignant not entirely corrupt. He will

\* *Expansion of England*, p. 166.

come across many questions on which he will be unable to form a decisive opinion, whether of approval or condemnation—questions which still mark the sharpest points of contention in the present day.\*

In this respect he will further learn that, if it were not for these and other problems in history, there would exist small ground of controversy in modern politics. Where does Fact, on which all are agreed, end, and Opinion, on which all differ, begin? Whence grew the influences which party politicians dignify with the name of principles? At what point in the chain of events does the student find the sympathy of his own day interfering with the even balance of his judgment, and diverting the rectitude of his opinion?

The moralist maintains that right and wrong can never be interchanged so as to represent good for evil, and evil for good. But the student of history will meet with difficulties which will impel him to ask,—What length of acquiescence in wrong will change it into right, or submission to an abuse give it a title to obedience? † Does success really justify revolution, and the continued possession of power condone its original usurpation? A distinguished disciple of the school of Carlyle ‡ lays down the dictum, that, the right of a people to independence consists in nothing but their powers of self-defence. Is an inferior people therefore, completely at the mercy of its more powerful neighbour, and is there no higher law in international politics than that of Force.§ Would such a dictum serve as the justification for the appropriation of Belgium by France,

\* Dr. Stubbs' *Lectures*, 95.

† *Ibid*, 22, 28.

‡ Froude's *English in Ireland*, i, 3.

§ See, on this point, the observations of our ex-president, Mr. Russell, in his Inaugural Address on "The Independent Prerogative of the Understanding in the Domain of Moral Judgment."—*Proceedings*, vol. xxxv, 24-26.

and of Holland by Germany? Our possession of Calais was for a long time the pride of our ancestors, and the compensation for its loss by the occupation of Havre and Dunkirk was the boast of such wise rulers as Elizabeth and Cromwell? Should we not now unanimously condemn the acquisition of any continental territory? Yet we retain our hold on Gibraltar. On what principle in the code of morals can we reconcile this conduct with our opinion? And, as a final question,—“What is the justification of our presence and rule in India?”

The exercise of the judgment upon these and similar problems in history, cannot fail to impress upon the humblest politician a sense of the deep responsibility which his citizenship in an imperial community, and the possession of a vote impose upon him. It will also develop in him such a disposition for patience and toleration, as will induce him to approach all questions in a prudent and temperate spirit; allowing some to wait till occasion and opportunity combine to solve them; determining others by the evidence of fact rather than by predilection, and letting others alone altogether, since justice has sometimes to rest content for a time, when a wrong cannot be righted without the infliction of a greater wrong.

That much needed virtue—courtesy in politics—will also be brought into exercise by such a disciplinary study as is here faintly sketched out.

Recent political controversy has been often embittered by the mutual accusation, that one party contains all the stupidity, and the other, all the enlightenment of the nation. Now no truths stand out in history more plainly than these—that there are few questions on which as much may not be said on one side as on the other; and that there are none at all, on which all the Ayes are good and wise, and all the Noes are bad and foolish. Goodness and wisdom,

truthfulness and honesty, are pretty equally divided among all parties, and so are the schemers and the thoughtless. The desideratum is that, while men do not cease to be partisans, or to advocate strongly the policy which they consider best adapted for the national welfare, they should credit their opponents with equal sincerity of purpose and honesty of conviction.

The facts and events of history are the common source of all their arguments: it is in their conclusions wherein the difference lies. And as each party professes to present the facts and events fairly and justly, so should each believe that opinions contrary to its own are likewise drawn with fairness and justice. "What we want to see," remarks Dr. Stubbs, from whose Inaugural Lecture at Oxford some of these considerations have been drawn, "is men applying to history and politics the same spirit in which wise men act in their discipline of themselves. Not to cease being partisans or holding or uttering strong opinions, but to be as careful in their party behaviour, and in the support of their opinions, as they are in their behaviour in social circles, their conversation in social life."

I proceed now to the consideration of the various ways in which history may be read in order to develop the faculty for politics, and furnish our citizens with the ability to exercise intelligently and conscientiously the power that is placed in their hands.

The History of England is emphatically the History of Progress. We see in it a constant movement in the public mind—a continual change in the institutions of a great society. It is such a history, because the English, above all other Teutonic races, have, throughout their national career, displayed a keen instinct for politics, and achieved more successes in the solution of political and social problems than any other people ancient or modern. There is no

deficiency in the supply of useful information. What is required is, that the people should make use of it.

If this age displays any characteristic more pre-eminently than another, it is that of the universal supremacy of the historical spirit. This spirit permeates our modes of thought in every department of human inquiry. The questions we ask, whether of a living organism, a political institution, or any form of human activity, are—What is its existing condition? What were its earliest discoverable germs? What has been the course of its development? Under this influence a school of historians has arisen who are as far in advance of Hume in their scientific method of treating the records of the past, as that well-known philosopher was superior to Tindall and Rapin.

The writings of Freeman, Stubbs, Green, Gardiner, Maine, Lecky and others, are certainly not readily accessible to the mass of the community, and if they were, would probably be consulted only by a few. But there are in addition, numerous other works of a simple and educational character, written by able scholars, and issued at a small cost, within the reach of all. Written moreover in the true spirit of history, which knows no political party, and well adapted for the edification of our newly enfranchised citizens in the history of those institutions whose future is now at their disposal. Such are the *Epochs of History*, published by Messrs. Longman; the *Handbooks* of Messrs. Rivington; the *Citizen* series of Messrs. Macmillan; and various other incidental publications of a like character. A small but very able and suggestive book on the *Rise of Constitutional Government in England*, by Professor Ransome, of Yorkshire College, Leeds, may be named with commendation, because it presents a history, generally considered to be dry and uninteresting, in a readable and very attractive form. Professor Seely's *Expansion of England* is another work

which it behoves every Englishman to read and ponder over. There are other productions also, addressed to popular readers, on which a word of caution is necessary. These are confined to some special period, sometimes one of great difficulty and controversy, like that of the Civil War and the Commonwealth, and selected for the purpose of enforcing the political doctrines of the writer. Other works, again, are confined to the times nearest our own, as if political history began with the Revolution of 1688, as some Whig writers used to hold; or with the Reform Act of 1832, as a popular tribune of our own day seems to think—all preceding history being "ancient" according to their opinion, and having little, or no apparent connection with contemporary affairs.

No period in the history of human society stands alone. Youth cannot be detached from manhood, nor this again from old age. Each is the outcome and consequence of that which went before. There is no break in the continuity of life, whether it be of the individual or of the nation. Generations of men follow each other like cause and effect, and before we can fairly understand or criticise the actions and persons of any period, we must possess a preliminary knowledge of the connection between such cause and effect. Not to begin at the beginning, and proceed faithfully through the history of a people; but, on the contrary, to take up isolated portions, and work upon them, imbued with the popular prejudices and philosophic ideas of the day, is surely inimical to the formation of a calm and sound judgment.

Take the case of Poland for example.

We can hardly realise in these days the intense indignation aroused throughout Western Europe, by the seizure and dismemberment of that unhappy country. The feelings then excited, kept aflame by the burning words of poets, still survive, and contribute in no inconsiderable degree to the suspicious attitude which Englishmen maintain towards

Russia. But the public sentiment grew out of a very one-sided view of this occurrence. Attention was confined to the few years which covered the process of dismemberment, and the circumstances which led up to it were either forgotten or unknown.

The French Revolution, moreover, was then stirring the heart of democracy in every civilised country, and the cause of Poland was identified with that of freedom, in popular sympathy, although her constitution had been the most aristocratic in Europe.

Let me not be understood as defending the iniquitous and rapacious conduct of the partitioning powers. Austria was guilty of the basest ingratitude to a people whose sovereign had delivered her from conquest by the Ottoman Turks ; and Prussia was utterly without excuse. Retributive justice speedily fell upon these, as by their deeds it fell upon their victim ; but the chief spoiler was Russia, and for what she did there existed provocation.

More than six hundred years before the annihilation of the Polish monarchy, the Slavonic races had been drawn asunder into adverse camps by the work of Christian missionaries. The Russians or Eastern Slavs were converted to the Greek Church, and the Poles or Western Slavs to the Latin Church. The two nations thus became the inheritors of the hostility which had then existed for centuries, between the Christian communions of Rome and Constantinople. The breach between the kindred races soon widened. Latin crusades against Russia, and the persecution of Greek religionists within Polish dominion, embittered religious hostility with national animosity ; and when Muscovy lay helpless under the heavy hand of the Tatar Khans, she had no deadlier enemy than the nation on her western borders, which sprang from like ancestors to her own. Her territories were seized by the Kings of Poland ;

they and their allies refused her all means of communication with Western civilization, simply to keep her down and exclude her from the world of progress; and when, freed from Tatar thralldom, the absence of a direct heir to the Czars plunged Muscovy into civil wars, her ancient enemy pounced upon the distracted land, harassed it from end to end, imposed upon it a Polish viceroy for Czar, and recklessly insulted the religious feelings of the people.

No wonder then that, when her opportunity came, Russia took full and ample revenge for the injuries she had suffered at the hands of her ancient kinsfolk. But she would have been powerless for revenge if Poland had not matured within herself the seeds of her own corruption. It is beyond the purpose here to show how Poland brought her fate upon herself. What I have to indicate is, that ignorance of her whole history prevented the formation of a true conception of her calamity, and that while she was pitied for this, and her plunderers held in just opprobrium, her own misconduct, which really brought about her downfall, escaped condemnation.

In order, then, to acquire a sound knowledge of the history of any period, or of any important movement, it is essential that we should bring to the study of it, an intelligent acquaintance with the whole course of political and social progress in the country concerned. This is not so readily attained as is sometimes imagined. Most persons think that ordinary history is easy to comprehend, because, unlike science, it is free from technical terms, because its statements are plain and intelligible, and the narrative is presented in an attractive form. But let anyone sit down, for example, to Carlyle's *Frederick the Great*, with a map, or take Hallam's or Stubbs' *Constitutional History*, and try to trace out the origin and growth of either House of Parliament, the gradual decay of Feudalism, or the rise of the

class of Free Labourers, and he will form a different opinion.

I do not mean to urge that everyone who reads history should become an historical student—that would be unreasonable. What I plead for is, that a citizen who is entrusted with the franchise ought to regard the attainment of a knowledge of the history of his country, and its institutions, as a duty imposed upon him by the possession of a vote. He ought to be able to apply the lessons of the past to the politics of the present, and when great questions come under discussion, he ought to be prepared to vote upon them with a clear comprehension of their antecedents and surroundings, and with a fair idea of what will result from the policy he supports.

It is asserted of the age of Pericles that "it was a time of contending forces, in which the chief peril was, lest the generation to which a larger future was opening, should lose its hold on what was best in the past."\* This observation aptly applies to the present day. The democracy which is destined to govern in the future has committed to its care the fortunes of an immense empire, with interests and responsibilities vaster and more complicated than those of any previous dominion which the world has ever seen. Above all things, then, this democracy should rightly understand how such an empire has been built up and consolidated, and what are the visible signs of its destiny in the future—what are the institutions which our forefathers have bequeathed to us for an inheritance, and which of them are worth preserving for the benefit of our posterity. It is the consideration of problems like these which imparts such an immense value to history, and which in this utilitarian age gives it a commanding position in the conflict of studies.

The first lesson that I would enforce upon the democracy

\* *Encyc. Britt.*, "Greece," by Prof. Jebb.

is this—that these institutions, which have done such noble work in building up the national character, are venerable with age, and should be improved, when required, with a reverent hand. They have come down to us from a time beyond written records. They are the limbs and organs of the nation. They have grown as it has grown, and changed as it has changed. Free and vigorous as the thought and energy of the people which has developed them, they have adapted themselves, in every age, to the needs of the nation without altering their essence in any material degree.

This continuity of our institutions is the marvel of English history, and the envy of our neighbours; and it extends from the institutions to the people and their history.

Our Parliament is the development of the old English Witenagemote and the Norman Great Council, and its present constitution is practically the same as it was six hundred years ago. The fundamental principles of our free government are to be found in charters and statutes quite as old, and ages before them in use and custom. If, in later days, as in the seventeenth century, our fathers were compelled to fight for constitutional freedom, the contest was not for revolutionary change, but for the preservation of an ancient inheritance.

In like manner our Courts of Justice, whether of general or local jurisdiction—the great officers of state, as well as our sheriffs, mayors, and aldermen, are the same now as they were in medieval times; and the latter bear in their seals of office the memorials of an age when the ability to subscribe an official document was a rare possession.\*

A familiar example of the permanence of our institutions, and their adaptability to the changing needs of the times, is presented to us in that of Trial by Jury, which has remained unaltered in its essential character for the last four hundred

\* *Freeman's Historical Essays, First Series.*

years. The origin of this greatest achievement of English jurisprudence has been discussed under various theories by numerous writers. These do not concern us at present. It is sufficient to know that forms of trial resembling the system in several particulars are to be found in the primitive institutions of all nations, and that the principle of determining a man's guilt or innocence of a criminal charge, by a free and independent body of his fellow citizens, and not by officers deputed by the executive authority, was certainly reduced to practice by our Teutonic forefathers.

The institution first became a recognised part of the machinery of English law under the name of the Grand Assize (or Grand Jury as we now call it), established by Henry II. Out of this arose the Petty Jury, or real jury of trial, which came into general use when the Lateran Council abolished the ancient trial by Ordeal in 1215.

The Ordeal was a superstitious appeal to the judgment of God. Trial by jury is an appeal to the judgment of the people; in its older form it was an appeal to their knowledge. Only those persons were impanelled who were known to be best acquainted with the question at issue. The trial was really a trial of witnesses, distinguished from ordinary witnesses by the customs which required from them a unanimous opinion—which regulated their number and prescribed their rank and qualifications.

The simplicity of the process was in keeping with a primitive time. The ordinary transactions of life were then open and public—matters of common notoriety. The husband declared the endowment of his wife at the church door, in the hearing of the assembled relations and the bridal train. The birth of the heir to an estate could not fail to be known and be remembered by retainers and tenants who shared in baronial festivities celebrating the event. The same witnesses could certify to the death of the ancestor

when they had followed his corpse to the grave. Land was transferred from one owner to another in the sight of the tenantry. By the process called Livery of Seisin, a turf, a stone or branch of a tree, taken from the estate, was visibly handed to the new possessor as his title deed. Parchment might be recommended by custom, but it was not required by law. There were no registers to consult—no books to open.\* If a deed of conveyance were drawn up it was publicly read in the presence of neighbours who were called together for that particular purpose. The evidence of all these transactions was said to be reposed in the memory of the neighbourhood, and if any one of them happened to be disputed in a court of law, the verdict of the jury was necessarily the true statement of those who had either actually witnessed the fact, or who knew of it from their fathers, or the general tradition of the neighbourhood.

As social conditions grew more complicated, and the business of life was more privately, or less publicly, conducted than before, deeds, charters and written contracts for the ratification of such private transactions became more common. Juries could only be cognizant of such evidence through the information of the witnesses who were named in the attesting clause of an instrument, and who had been present in the folkmote, the shire, or the manor court, when the seal was affixed to it. Such witnesses, indeed, were at first usually summoned on the jury, if they were legally qualified for the panel. But it would often happen that only persons of a lower degree, not so qualified, possessed the requisite knowledge of a matter in dispute. Such a difficulty led very likely to the distinction of witnesses from jurors, about the middle of the reign of Edward III, when it was directed, that they should be called in to give the jury

\* Palgrave's *English Commonwealth*.

the benefit of their testimony, without having any voice in the verdict.

This is the earliest indication we have of the jury deciding on evidence formally produced. It is the connecting link between the ancient and modern jury.

Before this time, however, it may have occurred that witnesses had been heard distinct from the jury, in criminal cases, as the case just referred to, taken from the *Year-Book* of the 28rd Edward III, bears no appearance of the introduction of a new custom.\* But after this reign the jury stand out more and more clearly, as judges of the facts, in contrast to witnesses who testify to the facts. For some time they retain both characters, and Sir John Fortescue, Chancellor to Henry VI, describes them in his Treatise, "*De Laudibus Leges Angliæ*," as "neighbours to the deed that is in question, and to the circumstances of the same": and as knowing "the manners and conditions of the witnesses, whether they be men worthy to be credited or not."†

This continued limitation of the jury to the neighbourhood of the cause under trial exposed the institution to great peril in that turbulent age. An upright verdict could hardly be given where a great lord or wealthy landowner, on whom the jury depended, was interested in the question at issue. That this was the case, we know from the numerous instances contained in the *Year-Books*, of the removal of trials to Westminster, or to another county, where a jury could act independently, without fear of threats or violence. This danger induced the custom of selecting the jury from the whole of the county, and other improvements followed, which gradually brought the institution into its modern form.

The varying needs of the times had, in fact, by the end

\* Hallam's *Middle Ages*, ii, 400.

† Finlayson's *Reeve*, ii, 540, Note.

of the fifteenth century, so modified the institution that jurors were then, for the most part, entirely ignorant of the cause they were called to consider, until it had been put before them in evidence. They had ceased to be witnesses or examiners of witnesses; they had become judges of the credibility of witnesses. The presiding judge directed them in matters of law, and he gave sentence according to their verdict in the matter of fact. The English jury being thus restricted to the duty of determining, whether the evidence submitted was sufficient to show that the crime or the trespass charged against the accused had been committed by him or not, their competency for the task remained the same under all the increasing technicalities of the law. In the continental institution this nice distinction between the functions of judge and jury never existed. French citizens impanelled to try causes were both judges and jurors, and not being lawyers, they were altogether disqualified for their judicial duties when jurisprudence became a science. For this reason the institution has decayed on the Continent, while it has endured in England.\*

Let us now turn to another institution whose original character was modified at a very early period by a change in political forces.

The Norman Great Council, which superseded the old English Witanagemote, was a council of the King's Barons—lay and ecclesiastical—of all those military tenants who held their lands directly from the Crown, and of the bishops and great abbots. It was essentially a feudal assembly, and it grew more exclusively feudal, as the less wealthy barons ceased to put in an appearance, on account of the inconvenience and expense of attendance. Between the King and the greater barons there began very early a contest for supreme power, which was the true origin in England of

\* See Forsyth's *History of Trial by Jury*.

party conflict and party government. On the one side was the feudal sovereign, whose wealth, powers and prerogatives grew enormously after the Conquest. On the other side were ranged the feudal aristocracy, bent upon freeing themselves from the King's yoke, and the burdens imposed upon them by their tenures. As the struggle went on, the sovereign drew to his side the support of the people, by enfranchising the burgesses of the towns on his own estates, and by occasionally summoning to the council delegates from the shires to report their grievances. These delegates were elected in the County Courts, where every freeman, whatever the nature of his tenure, had a voice; where there was no distinction of persons, and the nobleman and the farmer had equal political rights.

It was in these nurseries of English democracy that the lesser barons found compensation for their lost seats in the Council. By taking a more active part in local affairs, they learned that their political interests were more akin to those of the freeholders than to those of the nobility, and they gradually drew themselves nearer to the one while they lost sympathy with the other. Frequent united action and mutual confidence strengthened their alliance with the freemen of the county, and they eventually gained that influence which secured their election as delegates, and sent them back to the Council in the capacity of representative Knights of the Shire.

The barrier between the military and the farming tenants was thus broken down. Forces were at work which were slowly but effectively changing the complexion of the conflict between king and barons. The king was unconsciously learning that he was the head of a nation, and not merely a feudal lord, the first among peers. When the barons lost their Norman estates, they also found it necessary to throw themselves on popular support, against the tyranny of John ;

and the Great Charter which they wrested from that sovereign was the demand of the whole English nation, then for the first time united. Then it became evident that a national constitution, based on a charter in which the interests of every class of the community had been consulted, was the sole remedy against the despotism which would have ensued, if the feudal conflict between king and barons had terminated in the overthrow of either. The great tenants and their knightly vassals had learned to act together with the simple freeholders in the County Court against all encroachments upon their purses and liberty. To these elements De Montfort, with the clear and impartial perception acquired by his foreign training, added the burgesses of the towns in the Norman Great Council. From that moment this ancient assembly ceased to be feudal. It became entirely national; and the union of classes, which presently obtained in the House of Commons, was the strongest evidence of the depth to which the idea of national unity had struck its roots.\*

Another lesson in constitutional politics may be learned from the history of the Court of Star Chamber—a tribunal which sprang out of the old Norman Council. This court figures largely in our history during the reigns of the Tudors and early Stuarts, and its career shows us how an institution adapted for the public welfare may be degraded into an instrument of oppression.

The origin and early history of this notorious court are somewhat obscure. The Norman Great Council, like the older Witenagemote, occupied itself with all matters of government—legislative, judicial, and administrative. It contained the germs of the Courts of Law and Equity—Chancery, King's Bench and Common Pleas. The Houses of Parliament sprang from it, and the Privy Council.

\* Gardiner's *Introduction*, 91, 92.

The first detachment from the original body was the King's Court, from which again the law courts just named were offshoots, subject to an appeal to the parent court, where the king or his chief justiciary sat in council and judgment. By the time of Edward I, this supreme court of appeal had lost its original title, and was known as the Ordinary Council. Then, in the reign of Edward III, we find it sitting in the Star Chamber at Westminster—whence the popular name of later times—although the more appropriate title was the Council, or the Privy Council. Strictly speaking, the Court of Star Chamber was really a committee of this Council, consisting at first of certain royal officers with one of the chief justices, and ultimately of all the privy councillors and both of the chief justices.

In an age when turbulent nobles could not easily be kept in check by the provincial courts, such a tribunal was undoubtedly necessary, if the central authority was to exercise any efficient coercive power over evil-doers in high places. But its jurisdiction was undefined, and in the hands of a vigorous sovereign it was capable of being used as a preserver of order or an instrument of despotism, just as he willed. Many statutes were accordingly enacted, particularly after the reign of Edward II, confining its action within reasonable and equitable limits. One of these, in the 25th Edward III, which prohibited the court from having any jurisdiction over a subject's land, goods or chattels, or inflicting arbitrary imprisonment, is characterised by Hallam as probably the most extensively beneficial enactment in the whole body of our laws.

During the anarchy caused by the Wars of the Roses, the administration of justice was almost annihilated. Barons and great landowners, supported by their armed liverymen and retainers, took the decision of their suits at law in their own hands, determining them at the point of the sword.

They forcibly possessed themselves of lands and tenements, which they claimed as their own, and defied the officers of the law to disturb them. They interfered with elections, threatened judges and juries, and harassed and plundered peaceful and industrious burgesses. The need of some efficient weapon by which the government could suppress such disturbers of the peace was keenly felt. Star Chamber was the weapon ready to hand. The House of Commons accordingly, as representing the middle classes, who were the chief sufferers, promptly passed a measure—the famous Act of the 3rd Henry VII—which authorised the court to enforce the law, by fine and imprisonment, where it was thwarted by bribery, intimidation, or partiality; which suspended, in fact, the statute of Edward III, just named.

If this Act had been temporary in its operation, and if the enlarged authority of the court had been withdrawn when order was restored, it would have been a healing measure, and the character of the Tudor government might have been saved. But the Commons were not yet sufficiently trained in politics to know that a wrong done to one class of the community is a wrong done to all, and that the rich and powerful cannot be deprived of the safeguards of law without risk to the humble and the poor. They had armed the king with a weapon which rigorously suppressed the higher classes, but which also furnished him with the means of making very serious encroachments upon liberty and property. The court transacted its business sharply and without flinching. No jury interfered—no witnesses confronted the accused. He was examined on oath, forced to criminate himself, sometimes subjected to torture. The infliction of a fine often reduced him to beggary; a sentence of imprisonment confined him in some noisome dungeon, from which he did not always come out alive. Whipping and exposure

in the pillory, branding and the galleys were common punishments.

The success of the experiment gave the reconstituted court a dangerous attraction in the eyes of the Tudors. They found it to be a most convenient and efficacious instrument for coercing refractory subjects into submission to their arbitrary demands; and that which was intended solely for the punishment of lawless oppressors, became the greatest oppressor of all. The government, in fact, followed the ways of all governments when entrusted with extraordinary powers. Violent measures are only justifiable when the enemies of law and orderly progress cannot be put down by any other means, and the justification of the Commons in so arming society against its foes was the terror they felt of a repetition of feudal anarchy. But such measures, unless wisely used, and relinquished when the danger is past, demoralise a government, and the Tudors learned to regard coercion, not as a convenient and temporary safeguard in a perilous crisis, but as a regular and permanent method of administering the laws. The very success of Star Chamber, therefore, in supporting tyranny, brought about its own destruction. Its injustice and extortions excited general indignation. Its encroachments upon the liberty and property of the subject at last became unbearable, and the same authority which had called it into existence for the general welfare, for the general welfare abolished it altogether.

Let us now return to the consideration of the continuity of our history, and draw therefrom other political lessons.

I have already remarked that the history of England is emphatically the history of progress, and that this progress has proceeded without serious interruption. This may not seem apparent on the face of history as presented in our ordinary manuals, where successive periods are distinguished under characteristic titles. These distinctive titles, however,

do not represent any abrupt divisions or violent ruptures in the course of the national life. We find no new monarchy established on the ruins of the old, as in continental kingdoms. Our Royal Family through successive dynasties still traces its pedigree to Egbert and Ina. Even the Norman Conqueror claimed to rule as the heir and successor of the of the Saxon Confessor, and he professed to govern according to the ancient laws and customs of the Mercians and West Saxons. He and his sons certainly broke the genealogical line, but one of them presently restored the connection, and it has continued unbroken ever since.

The point, however, to remember, is that the constitutional character of the monarchy remains the same throughout. The kingship of the Tudors was the kingship of the Plantagenets, adapted to the needs of another generation. The great Whig Revolution of 1688, only confirmed in clearer language by the Bill of Rights, what the Great Charter had declared five hundred years before.

When we turn to the history and institutions of our nearest continental neighbour, and compare her fortunes with ours, we shall perceive that our advance beyond her in political progress, is due to this permanence and uniformity of our national life and history.

France has made experiments in every form of government, without regard to any relationship between them or their individual representatives. Her historians claim descent for the *ancien regime* from Charles the Great and Clovis. But faithful history knows no such descent. The Capets were no more the successors of the great Frankish Emperor, than Alfred and Athelstan were the heirs of Caractacus. France under the Merovingian and Carolingian sovereigns, was altogether a different dominion from the kingdom of France as ruled over by the Capets and Bourbons. There was nothing in common between them,

as there was no sort of affinity between the States General of Philip the Fair, or of Louis XVI, and the Great Council of the Carolingian monarchs.

In France, again, every department of the administration is of modern origin. Her prefects and ministers have no counterparts in medieval history like our own Chancellors and Treasurers. The political map of the country has also been completely changed. The departments bear no relation whatever to the ancient provinces, and these modern divisions are as completely detached from the older history of the country, as the chronology and nomenclature of the Revolution stands apart from the ordinary reckoning of Christendom.

Now the England of our own day, in its laws, language, and political institutions, is essentially the England of the Saxon and Northumbrian kings, grown and developed. The counties of England practically represent the same divisions as we find in Domesday Book, and with very simple groupings, they would represent the old English Kingdoms which contended for supremacy in the eighth and ninth centuries.\*

In like manner the current of English progress is marked by the same durability and depth, the same evenness and continuousness of character. Examined in sections or short periods, this does not at once appear. If we compare, for example, the period of the Long Parliament with that of the Restoration, or the thirteenth and fourteenth centuries with the fifteenth, we are presented with a series of actions and reactions. But these actions and reactions are the advance and recoil of the onward waves in the tide of human progress, and periods of apparent retrogression will be found, on more careful observation, to be periods of advancement, at a slower rate.†

\* Freeman's *Essays*—First Series.

† Macaulay's Essay on the Revolution.

One of these periods of apparent retrogression is the fifteenth century.

During the preceding century, the contest between king and noble, which I have already noticed, was still continuing with results generally beneficial to the national liberties. The feudalism, which the barons had tried to set up in opposition to the crown, was overthrown by the first Plantagenet sovereign, chiefly with the help of the towns. King John lost this support by his wretched misgovernment, and all classes—clergy, nobility, and people combined against him in the battle for the Great Charter. This alliance between peers and people, called into existence the House of Commons. Political power then became concentrated in the hands of a few of the wealthier nobility, and these following the tradition of the former struggle, used parliament as the readiest and most efficient weapon against the crown. In this way the House of Commons acquired great authority, and the most important of its privileges were at this time first asserted and acknowledged. But the Commons were, as yet, too feeble to stand alone. Allied with the nobility, they were able to keep in check the encroachments of the crown: cooperating with the sovereign, they helped to repress the usurpations of the oligarchy. When Richard II broke the power of this oligarchy, the Commons, deprived of support, were compelled to submit. Then they became subservient. By their aid Richard still further reduced the power of the nobles—by their aid he was dethroned; and by their voice, the usurper, Henry of Bolingbroke was declared the lawful successor to the throne.

This submission to the ruling authority, happily laid the foundations of that preeminent control over the national affairs, which parliament was to exercise hereafter; but in the fifteenth century it exposed the free constitutional monarchy to very serious risks. The right of Parliament to

legislate, was questioned and interfered with by the issue of royal proclamations having the force of law. A mischievous precedent was established, productive of troubles in later days, by granting the king the customs on imports and exports, known as tonnage and poundage. The revenue from these, for the term of his natural life, being sufficient to defray the ordinary expenses of government, the sovereign was thus made independent of parliament for his supplies. It was accordingly seldom summoned, and the salutary law (5 Edward II) which required that Parliament should be held once a year, and "oftener if need be," was virtually repealed.

Hitherto every freeman had possessed the right to vote, and the parliamentary franchise was practically one of universal suffrage. But the county electors were now restricted to the forty shilling freeholders—men of affluence in those days—and the popular house ceased to express the popular will so fully as before. The authority of Parliament thus grew weaker as the royal power grew stronger. Yet some good laws were passed and some good precedents established, which retrieved the decaying political character of the age. There were apparent also many significant indications which pointed to a restoration of parliamentary vigour. Thrown upon their own resources in the battle against arbitrary aggression, the Commons learned to be self-reliant. Their capacity to resist was strengthened by frequent use, while the way in which the old feudal nobility disappeared also contributed to their reinvigoration.

So long as the ancient baronage existed, the attainment of a supervising control over the government, by the House of Commons, was hardly to be expected without a violent revolution. This revolution happened ultimately, but it came with a slighter shock, because the peerage was not then placed in such direct opposition to the mass

of the people as it was in the fifteenth century. The feudal nobility of the fifteenth century overthrew themselves in civil wars, which were feudal in their character. They came to an end without any popular movement. Their successors rose directly from the ranks of the people, and although at first dependent on the Crown, they formed in the end the first rank of the opposition against the Stuarts, as their predecessors had presented the front line of resistance against the Plantagenets.

Again, if parliaments were less independent in the fifteenth century than they had been aforetime, they were regarded with greater importance, and their sanction was held to be necessary to the validity of every public transaction. The curtailment of the elective franchise tended to make that franchise more valuable—it came to be viewed as a privilege and responsibility. At the same time the position of a member, even of a borough member, rose in public estimation. Men of birth and landed property looked upon it as an object of ambition—men, that is, of spirit and independence, who were not likely to forego the rights and privileges, now undeniable, possessed by their order.

Every effort of the crown, after this, to increase the number of boroughs on the royal domains, and to secure the return of representatives devoted to its interests, only served to enhance the dignity and influence of an assembly without whose co-operation it had come to pass in England that government was impossible. The fifteenth century, then, on the whole was not an age of political retrogression, notwithstanding much circumstantial evidence which seemed to show that it was. Neither was it, in other respects, an age unserviceable to the growth of liberty and social advancement.

During the latter half of the fourteenth century society in England was greatly disturbed. A terrible pestilence, known

as the Black Death, decimated the population. The peasantry being the chief victims, the land fell out of cultivation. In a purely agricultural country, which England then was, dependent upon the produce of its own soil, this was a serious national calamity. The peasantry were conscious of their position, without any previous training in the principles of political and social economy. The work was there, as before, but the labourers were fewer, and they demanded higher wages. The serfs, yet remaining here and there in villeinage, were legally at the mercy of the land-owners—the free labourers were not, and they stood out “on strike.”

The House of Commons readily passed measures to coerce them into submission, for the House of Commons was not the popular assembly it is in these days. The workmen had neither voice nor interest in it. They were in every sense a lower order, and were so regarded even by the merchants and tradesmen of the boroughs—the classes next above them. The statutes framed by those whose interests were not in unison with their own, were accordingly lightly respected. The labouring population began to manifest a sense of their worth and position in the general community.

A literature of satirical songs, directed against the vices of the rich, was gradually growing up. The Author of the *Vision of Piers Plowman* severely criticised the clergy, the nobles, the knights and the traders. Wycliff's Doctrines, though aimed at the reformation of religion, in one instance, that of “Dominion founded in Grace,” taught the people to question the right of any class, person, or institution, to authority and rule, which could not justify its title by the services it rendered to the common good.

It was well that such attempts as were made by the lower classes of that day to right their wrongs failed, because they were not then sufficiently advanced in moral or political

training to be safely entrusted with the powers of remedy. It was also well that the vexed question of the relation between labour and capital was not forced to a violent solution at such a time, and that it was reserved, in the order of events, to a calmer and more enlightened age, when it could be brought to the test of reason and argument—when the wrong, in short, could be righted, without the infliction of a greater wrong. The crisis was not entirely unproductive of benefit to the lowly and oppressed. The ruling classes perceived the danger of leaving the peasantry to be goaded into rebellion by suffering, and the enforcement of unequal laws. They ceased to resist the spread of emancipation, but they did nothing to help it forward.

It is time, however, that this address approached its conclusion. I will, therefore, for a final illustration, trace the growth of a political doctrine, which in its oldest form conduced to settled order and government in an age which greatly needed both—and in its later form was productive of great political mischief, disastrous to the institution it was intended to uphold. I allude to the once famous theory of the Divine Right of Kings, the belief in which excites astonishment in modern days, and a feeling akin to pity for the intelligence of those who accepted the superstition.

I suspect that many persons, even fairly read in history, imagine that this doctrine was first promulgated, on the authority of Old Testament examples, to support the preposterous pretensions of the Stuarts to royal dignity and power independent of popular recognition. It is, on the contrary, a much more ancient doctrine, drawn from the jurisprudence of Imperial Rome.

Of the States founded by the Teutonic nations, the Visigothic kingdom of Spain was probably brought more directly under the influence of this jurisprudence than any other, save Burgundy, outside the Italian peninsula. The

*Breviarum Alaricanum*, drawn up in the beginning of the sixth century by Alaric II, under the superintendence of civil and ecclesiastical lawyers, although based on the "Customs of the Goth," previously compiled by Euric, was thoroughly Roman in character, and through it, Roman ideas, institutions, and manners, long survived in Spain. Accordingly, it is in the history of Visigothic Spain that we find what is probably the earliest open assertion of the Divine Right of Kings, in the laws of European States.

After their conversion from Arianism to Catholicism, the Goths threw themselves into their new orthodoxy with passionate eagerness. The vast influence which the Church had never ceased to exercise over the Roman population, was then extended to its Gothic converts, and the Visigothic monarchy became in effect a theocratic state, governed by the priesthood through the king. The Church drew to itself the whole temporal authority—its councils wielded all the power of a modern English Parliament, and they concerned themselves much more with political matters than with Church discipline. So long as the king moulded his policy by the advice of his ecclesiastical councillors, he was permitted to assume something of the attitude of a national head of the Church. It was to uphold the title and dignity of such a sovereign, in the person of the priest-ridden usurper Sisenanth, that the Fourth Council of Toledo, under the presidency of the famous St. Isidore of Seville, in A.D. 633, closed its proceedings with a solemn homily on the Divine Right of Kings. The disloyalty of other nations to their divinely appointed rulers is severely rebuked—the murder of a king is declared to be sacrilege, and anathema is pronounced against all who seek to compass his death, or to strip him of his royal dignity.

Sixty years later, the doctrine was again enforced by another Council, which declares that the highest virtue after

obedience to God is obedience to kings, who are His representatives on earth.\*

In the earlier medieval age, when bold and able adventurers were winning kingdoms and founding dynasties, and the once well ordered dominion of Rome was in perpetual confusion and revolution, such tenets undoubtedly had a restraining influence over those unruly spirits, who could only be kept in awe by the supernatural armoury of the Church. Under the guiding spirit of the clergy, Spain, even in that early age, was a well governed country. The laws were far above the average ideas of a barbarous people ; and although tainted with bigotry and persecution, especially against the Jews, they were in many respects rational, humane, and enlightened, combining the wisdom of old Rome with the kindly spirit of Christianity.

But the circumstances under which the doctrine was at first enjoined by the Spanish ecclesiastics, constitute a remarkably curious and satirical commentary upon their action. They had, themselves, only just completed a revolution which their doctrine condemned. Eighty years before, the Gothic sceptre of Spain had been disputed in a civil war. The weaker candidate sought the aid and protection of the emperor Justinian, and in return for this assistance, surrendered several fortresses and cities to the imperial troops. The gallant Swinthila delivered his country from this yoke ; but his rule was too just and vigilant to please the turbulent aristocracy, and too jealous of ecclesiastical control to satisfy the bishops. The combined hostility of these two powerful orders at length hurled him from the throne, and the crown was conferred upon Sisenanth, a mere creature of the clergy, who thundered their Divine Right anathemas to shield the usurper.†

\* English Historical Review, II, 224-232.

† Gibbon's *Decline and Fall*, chapters 38 and 41.

We next find the doctrine enshrined in the lofty ideas and theories which were attached to the imperial dignity of the Holy Roman Empire.

One of the legacies bequeathed to Europe by Imperial Rome was the idea of universal dominion. The Church combined with this the idea of a universal Christian society, and presented both to the world as the representatives of the dual nature of the Founder of Christianity. The spiritual rule of the Pope over the souls of men manifested the divine and eternal nature of Christ—His human and temporal nature was personified in the Emperor, who was divinely commissioned to control all worldly affairs. The Holy Roman Empire was the sole monarchy; the doctrines of the Holy Catholic Church constituted the sole religion. Under the Emperor ranked all kings and states, under the Pope all metropolitans and their churches. These two potentates were the vicegerents of the Deity, and by their united rule it was contemplated, that the new world of nationalities growing up within the bounds of the Roman Empire, would still render obedience to the same universal law that had swayed the older dominion. That there would be established, in fact, the great desideratum of our own day—a supreme international tribunal, which, by the divinity of its right and authority, would be able to maintain peace and good will among nations, who were being steadily estranged from each other by growing peculiarities of language, by increasing differences of habits and institutions. Such was the sublime ideal which embosomed within itself the doctrine of the Divine Right—in the first instance of the Emperor, and next of kings who were supposed to rule by his creation.

This union of the spiritual and temporal lords of the world never came into operation, except when able men occupied contemporaneously the spiritual and temporal

thrones, as during the reigns of the emperors Charles and Otto; and even then the union was accidental, and not the outcome of a principle or a system.

At one time the Popes themselves aspired to the sole supremacy, and in many respects were well fitted for it by the sacredness of their office, and their freedom from all ties of birth and nationality. But, owing to various causes which do not concern us now, a reaction set in against their assumptions, and there arose a disposition to regard the Emperor as the potentate best qualified to decide international quarrels. His position was purely ideal. He reigned by no hereditary right, nor by the will of the people; a political doctrine as yet unknown. For, provided he were orthodox and free born, he could be of any country or birth. The electoral princes of the Empire, who chose him for his high office, were conceived to be mere instruments in the Divine hands, and the Emperor was declared to reign over the world by the sole will of God. His claim to this temporal suzerainty was enforced by the decrees of Popes; Imperialist lawyers asserted it for centuries; the sovereigns of Europe acknowledged it in the style of their diplomatic correspondence, and none of them ventured to assume the title of "Majesty" before the seventeenth century, when the Imperial Chancery conceded it to the monarchs of England, Sweden, and France.\*

These lofty prerogatives were never more than partially recognised. Our English kings always claimed to be independent of them, and the theory at length broke down under the pressure of antagonistic facts. National sentiment and the feeling of local patriotism grew too strong to be arrested by any scheme of universal monarchy, while the ecclesiastical unity, which had existed, was entirely destroyed by the Reformation. A new condition of affairs then arose,

\* Bryce's *Holy Roman Empire*.

which gave birth to a fresh theory of kingly title. This later view was utterly unlike the medieval doctrine, whether in its purely theoretical character, or in the practical application of it, which princes had begun to adopt to signify their independence of Papal authority, and their right to resist ecclesiastical aggression.

Now, in medieval times, the whole theory of the organisation of government and society was founded on feudalism—on the relations between lord and vassal. A king was just as much bound by the customs of the realm as any of his subjects, and the notion of absolute and irresponsible monarchy was not a conception entertained by feudal lawyers and jurists. The authority of kings rested everywhere on their oaths to observe the customs. For any grave infringement of the laws they had sworn to administer, for any gross invasion of the rights they had sworn to respect, or for any serious neglect of the duties they had sworn to perform, they were held to be liable to forfeiture. Such royal delinquents were also held to be amenable to the supreme tribunal of international justice, whether presided over by Pope, Emperor, or both.\* The events of the sixteenth century changed all this. Papal and Imperial authority were both gone. Personal monarchy then set in, and the old doctrine, which had aforetime served as a barrier against sacerdotal aggression, was now applied to justify the absolute government of kings.

We shall better understand this new application of the theory as it affected our own country, if we recall the fact that, from the time of the Norman Conquest, the clergy and laity in England, the temporal and ecclesiastical authorities, had been in continual conflict. Ecclesiastical law was framed on the principles of the Civil Law of Rome. Between this Civil Law and the Common Law of England, the ancient

\* See Lilly's *Chapters in European History*, I. 192.

unwritten customs of the realm, there existed no sympathy. The great legal principle embodied in the Common Law was, that the custom made the law—that the foundation of law reposed with the people. This principle was the strongest safeguard of the personal liberty of the subject, and as such was prized by the nation. The Civil Law, on the contrary, centred everything in the sovereign, who was regarded by it as the source and dispenser of all power, right, or privilege. We can thus easily comprehend how it was, that ecclesiastics were generally the willing advocates of Divine Right and Passive Obedience, seeing that such tenets were the natural offspring of the Civil Law, and of the laws by which the Church itself was governed.

The hostility between the two legal systems was first manifested in the eleventh century. Attempts were then made, throughout Western Europe, to enforce the teaching of the Civil Law in the great universities, and to fashion all legal procedure in conformity with its principles. As all schools and seminaries were then exclusively controlled by ecclesiastics, it was evident that, in England, the traditions and modes of procedure with which the people were familiar, and which had been handed down from their forefathers, would gradually be superseded by the jurisprudence of Rome. The barons felt the danger and resolutely faced it. They resisted the intrusion of legal principles subversive of liberty—lay students of the law withdrew from the universities—and as the great Common Law Court of the land (the Court of Common Pleas) then sat permanently at Westminster, the lawyers, who practised therein, formed themselves into societies or colleges, gave lectures in the Inns, and conferred degrees. From that time the study of the two systems became quite distinct; the Inns of Court alone prosecuting the study of the Common Law; the universities recognising no other legal course except that of the Civil Law. It was

the professors of the latter, backed by the Churchmen, who now shaped the form of the new doctrine—it was the Common Lawyers, backed by the House of Commons, who vigorously opposed it.

Contrary to all the ideas of a feudal monarchy, the Stuart advocates of Divine Right represented the realm of England as if it were the patrimony of the sovereign, which he could exchange or cede at his discretion. Some even went so far as to maintain that all property whatsoever belonged to him, and that in the exaction of taxes, for example, he need not consult or obtain the sanction of Parliament, because he was only taking what was his own. As for the laws, instead of being regarded as customs established by popular consent, or statutes authorised by the popular representatives in parliament assembled, they were now declared to be entirely subject to the royal wish, and of no authority except such as the king conferred upon them.

I have already shown how the Commons were placed in single and unsupported opposition to the Crown at a time when they were least able to withstand it. But from that very time they began to gather strength, and at the accession of the Stuarts, when the new and vaster meanings given to Divine Right were being advocated, they had grown to be a very formidable power.

The Reformation had given a great impulse to their political, as it had given to all men religious, independence, and its main effect had been to lead them to question the claims of every authority upon their obedience, whether in Church or State. It was Wycliff's Doctrine of Dominion founded in Grace, literally interpreted and keenly discussed. The two central ideas, which the Reformation propounded—the Right of Private Judgment and Justification by Faith—left no place for the interposition of any authority between man and his Maker, whether of Priest or King. If all men

were equal before God, surely then the King, as one of themselves, was also equal with them; and whatever pre-eminence he held was derived from the people, who, for the sake of protection and good government, had surrendered their rights to his keeping. The "judicious Hooker" justified his illustrious title by setting forth this view in the first book of his *Laws of Ecclesiastical Polity*. And although Hobbes maintained that the people, having once given up their rights, had no power to revoke them, common lawyers like Coke and Selden, and statesmen like Eliot and Pym, stood not upon theories, but upon the solid foundation of laws and charters as the guarantees of the national liberties, and the incontestable proofs that the doctrines of Divine Right and Passive Obedience were political heresies dangerous to the common weal.

There are ideas of the past, which no nation can afford to forget, which are the indications of its growth in manhood, reputation, honour—in everything that makes it illustrious. But this idea, which called upon men to believe the fiction that a king received his commission to rule, immediately and personally from Heaven, and not from the consent of his subjects, may be justly consigned to oblivion, as the base flattery of courtiers and ecclesiastics.

I have now come to the end of this address, and from the illustrations which have been given of our history and institutions, and of the course of our national life and development, it will be seen that there is hardly a point in our early existence as a nation which does not awaken some responsive feeling in the present. Nearly every movement, that is now visible in the current of human affairs, can be traced with some distinctness to a mediæval origin. Our laws and legal customs, our political ideas and tone of thought, our methods of party warfare, all the principles and practices of our free constitution, are rooted and grounded in the distant past.

Every citizen, therefore, who desires to exercise the great political power now placed in his hands, intelligently, patriotically and independently, is bound to study the history of the past in the way that I have now indicated. Furthermore, since the decision as to policies and measures is now invested with the multitude, wise government for the future will not alone depend upon the foresight of statesmen. It will rest with the multitude; and the multitude should accordingly be taught how to gain political foresight for themselves.

Now, if history is worth anything at all, it should enable us to forecast the future—to foresee, in outline at least, what will be the consequence of measures and events. In reading the history of the past experiences of the nation, we ought surely to question ourselves as to what will be our probable fate in the future. Many momentous problems, both of home and colonial policy, are even now awaiting us, and we cannot hope to solve them unless we understand them. To understand them is to know their history—how they have grown, and the circumstances which have ripened them into maturity. And in order to grapple successfully with their solution we must study the great questions which exercised the minds of our forefathers, observe the principles which guided them, and the results which followed.\* It is, in this way, that the study of English history is not only a study of the past but a study of the future also; and it is, in this way, that it forms the best and purest school of political education.

\* See Seeley's *Lecture on History and Politics* in his *Expansion of England*.

## ON MR. H. SPENCER'S CONQUEST OF THE PROBLEM OF THE UNIVERSE.

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1. As it had been announced, Mr. Herbert Spencer came forward to attack the problem of the universe. 'Ladies and gentlemen, the problem of the universe, the whole universe, is before me. A vast subject. Before we enter on it, a clear question or two, as guiding lines of thought, may help you. I submit two. First, this universe—what is it? Secondly, this universe—whence comes it?' He paused as for a reply.

In less than ten seconds up rose, as high as he could, a little old man, with a broad forehead and a worn coat, quite incapable of Mr. Spencer's flights of fancy. 'Sir, I beg to say that your second question, about east and west, north and south, is very like nonsense. Even if you have the whole universe before you, I don't believe you have any ground for saying that it ever came from anywhere else at all. As to your first question, What is it? I can answer that all round. The universe is either what it is, or else what it is not. That answer is wiser philosophy than your question, and a better one than it deserves.' He sat down.

Of course, Mr. Spencer took no notice of the old gentleman's speech; yet it may have had an effect, as the great Teacher went at once into what we afterwards discovered to be the matter of the second question.

2. At page 30 of his *First Principles* (1880) he prefaces and goes on thus:—"To the mind as it developes in speculative power, the problem of the universe presents itself.

What is it? and whence comes it? are questions that press for solution. . . . . Respecting the origin of the universe, we may assert that it is self-existent; or that it is self-created; or that it is created by an external agency. Which of these suppositions is most credible it is not needful here to enquire. The deeper question, into which this finally merges, is whether any of them is even conceivable *by me* in the true sense of the word. Let us successively test them." Thus the question is astonishingly simplified. No need to be worried about reasons or logic of any kind.

He then undertakes to prove that all three are alike suppositions inconceivable to him, and takes it for granted that we are all ready from that to conclude that they are alike unreasonable. The only *data*, on the strength of which he demands that we accept this verdict, are his affirmations and denials about one man's conceptions, namely, his own. These are doubtless *data* to him, but to no other finite thinker; for his conceptions cannot be placed before us, nor in any way inspected by us; his concepts are no more open and accessible to us than ours to him. The mental processes of which he continually talks; his symbolic conceptions of this or that order; his real conceptions; his representation or rendering into thought, as he learnedly phrases it, of this thing, and his realisation in thought of the other thing—all are performed in a secret chamber to which we have no entrance; and not one of the decisions about the above stated three assertions, which he triumphantly records as demonstrations, can be verified by others from the *data* which alone he reports as handled by him, namely, the conceptions of Herbert Spencer. Those handlings are described as very philosophical and very scientific testings; but they are experiments performed by him alone in secrecy inviolable. There is no proof offered, nor any possibility of such offered, that the testings were either

begun or ended with truth-seeking effort, or with skill either logical or scientific, in any degree whatever.

3. Hence no bare statement, that this or that is or is not inconceivable by Mr. Spencer, can be listened to in learned debate ; for to allow it as of any weight or pertinence is to perpetrate the laughable sophism of *non datum pro dato*.

Against the sophism, *non causa pro causa*, we are abundantly warned in the old books on logic, while the one just named is not so expressly banned. In fact, those scholastic gentlemen were perpetually wielding this with mutual admiration, and without rebuke ; especially when they talked Psychology, a science almost as rich in moonshine as their Ontology. Surely the day will come when piles enough of volumes filled with logic like Mr. Spencer's shall have been heaped on mouldering piles, to justify the stern prohibition of this *non datum pro dato*.

One reason why this sophism was not formally entered in the old tables may be, that it is too ridiculous to be worthy of a label. The general rules of reasoning were, of course, a sufficient warning against logical blunders. Its connection with a name so famous as that of Herbert Spencer will, I hope, shield me from the charge of presumption in giving it a label. When a conclusion in philosophy is founded upon *data* given alike to all debaters, and when the reasoning which leads to it is clearly stated and offered to the judgment of all, is it enough that an opponent shall pretend to make an end of the matter by ruling thus :—'This is not a question of either probability or of credibility, but simply of conceivability to me ?' Is that enough ? And if that opponent, without listening to any of our arguments on the *data* before him and us alike, and without pointing out one mistake of ours about the *data*, or one flaw in the logic of our reasoning, shall curtly remark,

'Your conclusion is to me utterly inconceivable, and therefore untenable,' are we all bound to feel ashamed of ourselves?

I propose to examine this solution of the problem of the universe, so far as to justify my deliberate assertion that almost the sole weapon wielded by the writer against opponents is this *non datum pro dato*. To show this, in the extracts which I give, chiefly from the first part and the appendix to *First Principles*, I give the author's exact words in Roman type, to be read right on, neglecting only the italics, which are mine, introduced in order to make him speak of his own conceptions, and of none other. By the reader of the italics the Roman words in brackets are to be omitted. I thus make the writer speak in the first person of his ideas and concepts. This is my abbreviated way of remarking to my reader that, before we consider the effect of his argument on the position of the adversary, we have good reason to object to a flagrant *non datum pro dato* in the conduct of it.

I challenge denial from all quarters that I have the right to make these changes in (2) and in what follows. An author, in asserting his own inability to conceive this or that, ought not to be allowed to affirm, or to assume, the same of the reader's thought or power of conception; for of that he neither knows nor can know anything, apart from grounds of inference supplied by the acts and propositions of the reader, which grounds are nowhere adduced by Mr. Spencer in his tacit assumptions about other men's concepts. Of course, he has the right to deny my power to conceive what he, by good logic, without flourishes about his own concepts, has proved to be nonsense. Until he has proved this, where is his testing apparatus for deciding that this or that is inconceivable to you or me?

I shall, in what follows, invariably quote Mr. Spencer's

printed words under double commas, with the page of his *First Principles*, 1880, in which they are found. Whenever I introduce him as replying to an objector, I shall give the words assigned to him under single commas.

4. Touching the first of the three assertions in (2), we read thus, page 30 :—"When (we) *I* speak of a man as self-supporting, of an apparatus as self-acting, or of a tree as self-developed, (our) *my* expressions, however inexact, stand for things that can be realized in *my* thought with tolerable completeness. (Our) *My* conception of the self-development of a tree is doubtless symbolic. . . . To form a conception of self-existence is to form a conception of existence without a beginning. Now by no mental effort whatever can (we) *I* do this. To conceive of existence through infinite past time implies the conception of infinite past time, which is an impossibility. . . . Thus the atheistic theory is *to me* not only absolutely unthinkable, but, even if it were *to me* thinkable, would not be a solution."

What is above quoted from pages 30, 31, is the author's supposed refutation of the atheist, whom he defines as the maintainer of the self-existence of the universe. I leave him to the mercy of the atheist, who, looking at the above sentence, ending with 'impossibility,' will very likely inform Mr. Spencer, that no man in his senses, atheist or not, ever wanted or ever tried to conceive of existence through infinite past time. For the rest, let us hope that the atheist will amuse himself gently with our author's *non datum pro dato*, the only argument presented. It is so easy to be very profound about the infinite !

5. Touching the second assertion in (2), at page 32 we read :—"The hypothesis of self-creation, which practically amounts to what is called Pantheism, is similarly incapable of being represented in *my* thought. . . . (We) *I*

cannot form any idea of a potential existence of the universe, as distinguished from its actual existence. . . . (We) *I* have no state of consciousness answering the words, an inherent necessity by which potential existence became actual existence. To render them into *my* thought, existence, having for an indefinite period remained in one form, must be conceived *by me* as passing without additional impulse into another form, and this involves the idea *in me* of a change without a cause—a thing of which no idea is possible *in me*. . . . Moreover, even if it were true that potential existence is conceivable *by me* as a different thing from actual existence, and that the transition from the one to the other can be mentally realised *by me* as a self-determined change, (we) *I* should still be no forwarder: the problem would simply be removed a step back. For whence the potential existence?"

This is the pith of his supposed refutation of the Pantheist. I shall not further follow Mr. Spencer's working out against him what is very like the triumphant demonstration of Hume's *Philo*, which is so easily shewn to be nonsense in *Philosophy without Assumptions*, p. 334 (Longmans, 1876). The Pantheist and the Atheist will laugh alike at the potent sophism, *non datum pro dato*, thus presented and fired at them.

6. My reader may here charge me with over-fastidiousness in requiring our author, when rejecting the idea of a change without a cause, to say, the idea *in me*, &c. Let me be permitted to state my conviction that if two debaters are already agreed to accept the axiom that no change C can occur without an acting cause, which is not itself a change nor the change C under another phrase (as when the law or found force of gravitation is affirmed to be the cause of the falling of a stone), but is a cause that acts all through the time of the change C, neither will ever have

occasion to talk about his idea of that verity. Any error in reasoning (since this can be carried on as debate only by plain propositions about *data* given alike to both debaters) would be exposed without appeal to concepts, by showing that the error involved the denial of the axiom. Two mathematicians can debate and instruct each other for half a lifetime without ever prating about their concepts of the matter. Centuries ago, thanks to the glorious thinkers who have preceded us, we have had clearly written down in words that shut out quibbling, both in pure and in applied mathematics, all necessary axioms and definitions, without the intrusion of the term *concept*, or any of its equivalents, into a single one of them. Metaphysicians and psychologists can go on for centuries riding their donkeys round and round the same circles, all looking about, as their great grandfathers used to do, for the proper concept of mustbeity and perseity, of aprioriality and transcendentality, of substantiation and instickation, of objectivity and continuity, of correlativity and polysyllabicality in general. Happy men! Their occupation in hunting the right concept is a joy for ever.

7. Touching the third assertion in (2), in answer to the question, Whence comes it? so brilliant with its trope, and so lightly and cleverly leaping over the dreaded word *cause*, we read, at page 33 :—"There remains to be examined the commonly-received or theistic hypothesis, creation by external agency. . . . It is assumed that the genesis of the heavens and the earth is effected somewhat after the manner in which a workman shapes a piece of furniture. . . . We find it taken for granted that there is an analogy between the process of creation and that of manufacture. Now, in the first place, not only is this conception *in my mind* one that cannot by any cumulative process of *my* thought be shewn to answer to any thing actual, and not only is it that, in the absence of all evidence respecting the

process of creation, (we) *I* have no proof of the correspondence between this *my* limited conception and some limited portion of the fact; but it is that (the) *my* conception is not even consistent with itself—cannot be realised in *my* thought when all its assumptions are granted" (page 34).

Next comes something about matter and its creation out of nothing, of which the author's unproduced conceptions are affirmed to be equally chaotic. But this may be spared, since the puzzles about the existence and conceptions of matter, however laughable to rigorous science they be, have no connection with the hypothesis or proofs of theism.

What follows in this page 34 is more to our purpose of doing justice to the wonderful thinking power of our author. "Still more manifest does the insufficiency of this theory of creation become, when we turn from material objects to that which contains them—when instead of matter we contemplate space. Did there exist nothing but an immeasurable void, explanation would be needed as much as now. There would still arise the question—how came it so?"

Here we have a tolerably well-defined supposition—an immeasurable void; and next a proposition that may at least stand a moment while we admire it—"there would still arise a question." This could hardly be without a questioner. Where does he put him? He must be existing somewhere. The questioner is evidently the learned writer, who thus posits himself debating and questioning in a perfectly empty immeasurable void. This is easily rendered into his thought, and passes well the testing of his conceivabilities. His exquisite power of conceiving and realising things in his secret cell is, after all, not quite so delicate a test of the presence or absence of the fatal poison, nonsense, as he wishes us to believe. Yet, if not infallible, it is a test handy for use, and deserves mention in the manuals of toxicology.

At page 35 he returns to the shining weapon of Hume's *Philo*:—"Lastly, even supposing that the genesis of the universe could readily be represented in *my* thought as the result of an external agency, the mystery would be as great as ever; for there would still arise the question—how came there to be an external agency?" That is, if there is an Infinite Creator and Upholder of All, how came He there?

8. Mr. Spencer sums up his discussion of the origin of the universe thus (page 35):—"As was proved at the outset of the argument, self-existence is *to me* rigorously inconceivable. . . . Whoever agrees that the atheistic hypothesis is untenable because it involves the impossible idea *in me* of self-existence, must perforce admit that the theistic hypothesis is untenable if it contains the same impossible idea *in me*. Thus these three different suppositions respecting the origin of things . . . turn out, when critically examined, to be literally unthinkable *by me*."

Then comes again, as in (2), the crushing judgment about our faith in a purposing Cause and Preserver of all things visible and invisible, with all its convincing present facts and its reasoned inferences from effect to cause:—"It is not a question of probability, nor of credibility; but of conceivability *by me*!!" (page 35). Even so went forth from the prophet's lips that mighty wave of negationist wisdom! Even so is it now speeding onwards to wash all the worlds from earth's orbit to the farthest nebula, and to quench religion's faith and hope for ever in them all!

In questions that arise in the problem of the universe, apart from arithmetic and geometry, in which fields of thought there is no change and therefore no causation, probability, however, wisely reasoned, says Mr. Spencer, goes for nothing, as also credibility and its array of evidences go for nothing; the test of truth or falsehood is just this—conceivability in the little pate of Mr. Herbert Spencer, on

which question the only judge, jury, witnesses, counsel, and excellent reporter are—the said sole and sufficient Herbert! I think I have justified my assertion in (3) that almost the only weapon wielded by this conqueror against his adversaries is the feeble sophism, *non datum pro dato*.

I leave the reader to pay his own thanks to our author for his deliberate and most unfair caricature of theistic thought and faith in (7) and for the nickname “external agency” by which he designates the creating and preserving energy of our omnipresent, purposing, and omniscient Cause, who is *ὁ ἐνεργῶν τὰ πάντα ἐν πᾶσιν*. We believe in a carpenter-God, who is ever turning out things external to Himself!

Our author has not defined “external agency.” We must therefore understand by it that the universe is the work of an agent outside this universe, of which the origin and nature are under discussion. Was he quite sure that he was telling the truth in laying this down as the doctrine of believers in the living God? If by “external” he here means something different from *outside in space*, he is practising the useful device of employing in the primary outline of his argument a term vague, undefined, and misleading, to say nothing of the offensive untruthfulness which forms all its plain meaning. Thus the second question in (2) is settled.

9. When Spinoza, with his repeated *concepitur*, in the first page of his *Ethics*, and when Kant, with his equivalent *gedacht wird*, in the third page of the Introduction to his *Critik*, lays down a fundamental definition which has to carry the weight of nearly all that follows, I shall be supported in my demand that, before they are presented to us, the words *a me* and *von mir* shall be added. This done, I shall remark with thanks, that nothing is offered to us but an amusing *non datum pro dato*, which makes nonsense of all that issues from it. I hope to return to this on a future occasion.

Mr. Spencer has many things to say about the infinite, all wonderfully old *testimonia paupertatis*. Meanwhile, men of accurate thought, whether mathematicians or not, go on satisfying themselves that, when for answer to a clear question that all agree will be asked, it is evidently absurd to accept either nothing or finite, we are justified in recording infinite as the true reply. We do not pretend to conceive the maximum final term of the series of natural numbers 1, 2, 3, 4, &c.; but when we say it is infinite and nothing less, we know that the man is an idiot who replies—‘Yes, but what is on the other side of your infinite?’ In the same way, when from the facts of the present we draw any other given line of thought that loses itself in the infinite, and have agreed to call the reality at that further end First or Ultimate, it takes a couple of idiots rolled into one to frame the questions—How came there to be a First? How came that Ultimate there? What was before that First, and what is beyond that Ultimate? Yet the fact that given elements of reasoned thought lead us on towards the infinite does not make us all eager, like nimble Mr. Spencer, to gallop away from the field of clear question and answer about what is close to us, right up to infinite at once, and to begin our arithmetic or philosophy there—still less our religion.

The infinite, whether we soar in vain to it in arithmetic or in philosophy, is, to the soul capable of religious aspiration, a summons, *sursum corda!*—which we glory to understand and to answer by adoring Him, “the fulness of Him that filleth all in all,” “in whom we live and move and are;” and the fact, that we can so hear and leap up, is a proof to us, as it was to thinkers millenniums ago, of this verity, “for we also are His offspring.”

10. Next comes the author’s reply to his first question—What is it? At page 36 we read, “If from the origin of the universe we turn to its nature, the like insurmountable

difficulties rise up before us on all sides. . . . (We) *I* find (ourselves) *myself* on the one hand obliged to make certain assumptions, and yet on the other hand (we) *I* find these assumptions cannot be represented in *my* thought" (page 36). . . . "The objects and actions surrounding us, not less than the phenomena of our own consciousness, compel us to ask a cause; in search for a cause, we discover no resting place until we arrive at the hypothesis of a First Cause; and we have no alternative but to regard this First Cause as infinite and absolute. These are inferences forced upon us by argument from which there appears no escape. It is hardly needful, however, to show those who have followed thus far, how illusive are these reasonings and their results" (pages 38, 39). That is, we, who have seen Mr. Spencer's powerful handling of his *non datum pro dato* (for we have seen nothing else in following thus far) are sure to perceive how illusive is every single step and every result both to reason and conscience of our enquiry about the Cause of the universe or of anything that is in it, which is more than a question about an antecedent. All our "reasonings and their results" are "illusive." "It is hardly needful" to remind us of the proof of this. No exception is made. To fancy that there is any need of a Cause is an illusion; to think there is anything more than nonsense in the question—Is there a Cause? is an illusion. To suppose that it concerns us at all, either for the present or the future, whether there be or be not a Cause, is illusion, either as our postulate or our result. To think that there is a rational ground for any proposition or precept that issues from the belief in an intelligent, purposing, and ruling Cause of the universe, is all illusion. We shall see too plainly in what is about to come before us, that Mr. Spencer means all this (pages 38, 39). At page 37 we read—"Is the First Cause finite or infinite? . . . If the First Cause is limited,

and there consequently lies something outside of it, this something must have no First Cause—must be uncaused. But if we admit that there can be something uncaused, there is no reason to assume a cause for anything."

11. Is he in earnest, in the above passage from page 39, in his use of the plurals, "we," "us," "our"? I ask this, because I do not believe it possible for any sane thinker to be in the state which he describes; on the one hand, to be compelled to affirm a First Cause, infinite and uncaused, and this by argument from which appears no possible escape, and on the other, to be forced to know and to see that both the compulsion and the affirmation are illusive, that is, unreal and irrational. I do not believe this possible. The chain of reasoned thought from effect and change to an acting cause has been reputed strong, and Mr. Spencer in (10) bears his witness gushingly to all its strength; yet he can snap that chain by a word, illusive. He is the King of athletes; he is the Sultan of conjurors.

Talk no more of Samson or of Hercules; let us hear no more of the slippery Davenport Brothers. You Philistines, you bound your strong man by your best well-strained cord of reasoning; you tied his wrists and elbows, his knees and ankles, to your firmest chair; you tightened your knots by all the force of your logic; and, with his full consent, you shut him up so fastened. Then what did he? Before you could turn round he had whispered the magical syllable *illusive*, and was flourishing on the platform with every joint at liberty.

And what think you of the modesty of this gentleman? He is actually vain enough to fancy that, when he has gained admittance by his apparently frank and full confession of the cogency of Reason upon the Cause, the sharp skene will be drawn across Reason's throat, and black negation of all intelligent and purposing causation will

be enthroned, on his utterance of the playful word "illusory."

We shall see in the sequel (19, 20), that Mr. Spencer had his reasons for furnishing himself with an excuse for declining to be accountable for his own nonsense. The cosmos which he came into the world to evolve is one so shockingly bungled that, in doing his masterly work, he is compelled to stand on a sort of knife-edge, between "alternative absurdities"!

It is important to observe that one affirmation of which he declares the illusiveness to be too plain to require pointing out, is that of a First Cause, whether intelligent or not. He does not tell us that we are compelled to affirm it intelligent as well as infinite and absolute; it is by a complete illusion that we "arrive at the hypothesis of a First Cause," knowing or not knowing.

12. The meaning of the first mysterious question—What is it?—has turned out to be (10), "What is the nature of the universe?" I never yet could learn what philosophers denote by the nature of a thing. I am unfortunate, for everybody else seems to know. But when a master communicates to a fit audience all that he really knows about a thing, say a pebble or a sponge, he never says "Now, or lastly, I will unfold to you the nature of the thing." The gentleman who undertakes that section of the subject is always one of those who know the least, and can therefore talk and shine the most, about it. I think Mr. Spencer was in his right place on that platform, when he propounded as a question that pressed for solution, 'What is the nature of the universe?'—i.e., 'To which of the departments of my varied knowledge shall I refer this universe? And when I have done, into which pigeonhole am I to stick this universe?'

No mention was made of the Cause in the opening of the solution of the great problem, nor has one argument of

believers for the existence of an Intelligent Cause, built on the facts of the current hour, been met, or even alluded to. That one word "how illusive," with a mere reference to what small previous logic has come before us, has swept away both the philosophy and religion of Theism! No argument of Mr. Spencer's after that "illusive" has been here omitted. All that he has intelligibly to say on the nature of the universe is in the second sentence quoted in (10) from his page 86, in which the "assumptions" are evidently concerning the Cause, except a heap of wisdom which follows, parading his own and other people's shuttlecock metaphysics, about the Infinite and Absolute. There are grand questions about Infinite. Here is one—Is it odd or even? What a stack Mr. Spencer could pile on that! We are much disappointed by his summary handling of the tall question, "What is the nature of the universe"?

13. At page 53 we have remarks on the teaching of the immortal and unanswered Jesuit, Boscovich. "This speculation posits a proposition which cannot by any effort be represented in *my* thought. . . . A centre of force absolutely without extension is *to me* unthinkable. . . . to suppose this is utterly beyond *my* human power."

With this compare a familiar fact. All mathematicians, who handle the motions of bodies celestial or terrestrial, do suppose that central forces, of which gravitation is one, and the only one understood, reside in points having position only and no parts; not indeed with nothing to mark their position, as Mr. Spencer in this page imagines, but with clear knowledge by demonstrations or *data* of every such position, so that the lines joining every pair of such centres of gravity, &c., are exactly given in length and direction. Fixing their minds on those lines only in which the forces are completely given as acting from centre to centre, they solve, with sufficient accuracy, every problem before them. They do this

continually, with method and success. About matter they never trouble themselves. The symbol  $m$  in their reasonings, usually called *mass*, is the ratio of momentum to velocity, a number always found by experiments on bodies, experiments that would give the same answer as now if all the matter in the universe were annihilated, and if the Cause were to continue working, as He now works unsearchably, in the lines connecting the same centres having changing positions and no parts. Here we have a second demonstration of the value of Mr. Spencer's test for nonsense. "Let us successively test them," quoth he, at his page 30 (2).

14. Having wept over the complete destruction of our old religion, so that we have left to us no Intelligent Cause, no Creator, no Preserver, no Father, we are invited to hear Mr. Spencer preach about his new religion. At page 109 we read:—"This, which to most will seem an essentially irreligious position, is an essentially religious one; nay, is *the* religious one, to which, as already shewn, all others are but approximations. In the estimate it implies of the ultimate Cause, it does not fall short of the alternative position, but exceeds it. Those who espouse this alternative position make the erroneous assumption that the choice is between personality and something lower than personality; whereas the choice is between personality and something higher. Is it not just possible that there is a mode of being as much transcending intelligence and will as these transcend mechanical motion? It is true that we are totally unable to conceive any such higher mode of being. But this is not a reason for questioning its existence; but rather the reverse. . . . Does it not follow that the ultimate Cause cannot in any respect be conceived by us, because it is in every respect greater than can be conceived? And may we not, therefore rightly refrain from assigning to it any attributes whatever, on the ground that such attributes, derived as they

must be from our own natures, are not elevations, but degradations?"

*E.g.*, for the admiring reader—the two attributes, love of truth, and delight in Herbert Spencers. Put each in turn for "any attributes whatever." Nothing like examples for bringing out the brilliancy.

And much more was added for which we have not space. It will be observed that no change (described in 8) is made in the text of page 109.

This Ultimate Cause is frequently spoken of as the Unknown Cause, "manifested to us in familiar forms" (page 556); "the Unknown Cause co-extensive with all orders of phenomena" (page 557); "an Unknown Cause of the known effects which we call phenomena" (page 171); but I do not find it called a First Cause. This is meant for consistency. He has proved a First Cause to be nonsense in his powerful way (in 10).

It is called also "an Unknown Power manifested to us through phenomena," the Power "in which (not in whom) we live and move and have our being" (page 581); a Power that "works in us certain effects" (page 557). At page 99 we read—"Omnipresence is unthinkable."  
 . . . . "And this consciousness of an incomprehensible Power called Omnipresent, from inability to assign its limits, is just that consciousness on which religion dwells." "Called" by whom? It either means, I so call it, or I wish you so to call it as your religious teacher.

I find nothing here positively predicated of this Cause and Power which is not affirmed in all monotheist religions of the Supreme Cause, Preserver, and Ruler of All. The negations make a wonderful difference; for we are forbidden in this new religion to assign any attribute to the Power inscrutable. It works, but we may not say that it has any

knowledge of how, or why, or where, or when it works, nor that it is ever even aware that it is working.

There are three questions quoted above from page 109. As I am not playing at hide and seek, I shall hold Mr. Spencer bound to them as to three affirmations by a preacher who knew what he was about, and who meant, not merely invited me, to make them, viz., the questions—"Is it not?" "Does it not?" "May we not?"

If I am asked what right I have to hold him responsible for more than he has exactly written, I reply by asking 'what right has a treatise on First Principles to handle the foremost and grandest of all theorems in terms of roundabout and wheedling insinuation?' For a better answer, see Article 22.

15. Many criticisms on this sermon were submitted to Mr. Spencer. One to this effect—"You describe with a *quantum* a mode of being which overclambers (we prefer English to Latin) intelligence and will, as much as these overclamber mechanical motion. This mode you say you "are totally unable to conceive." Therefore by your test of truth you would have us to affirm that it is nonsensical and non-existing. You speak of an Ultimate Cause occupying that mode, telling us that this Cause "cannot in any respect be conceived" by you. Therefore this Cause by your test is nonsensical and non-existing. Yet you affirm that this Ultimate really exists in that really existing mode! How can that be?' Mr. Spencer smiled in silence.

A second was to this effect, 'You tell us that "we (*i.e.*, both you the teacher, and we the learners) are totally unable to conceive" this overclambering mode of being, and that this fact, instead of being, as in all that precedes, "a reason for questioning its existence," is "rather the reverse," that is, is a good reason for believing it. Of course, if it had been inconceivable to you only, we should by your infallible test of

truth and of the untenable (9) have been bound to deny such a mode of being, and consequently to deny your Ultimate therein existing, for no Ultimate can exist in a non-existing mode. But the fact being that neither you nor we can conceive this mode, this, you inform us, binds us to the reverse of denial, that is to belief. How can that be ?' Mr. Spencer smiled indulgently.

After a short pause, my friend W., enjoying the fun, came forward with sparkling eyes to defend Mr. Spencer. 'What dunces you all are not to see the force of the preacher's logic. Look at this second objection. When he told you that the existence of your Theistic Cause having intelligence and will was inconceivable to him, did he say distinctly that it was so to you also ?' 'No,' was the reply. 'Right,' said W., 'there was one negation, his, not yours. What next did he say ? He said—"It is true that we are totally unable to conceive any such." Mark that *we*. There are two negations ; on his part one, and on your part one. The thing is equally nonsensical to both sides. Now, two negatives make an affirmative. And by this grand affirmative you are all bound to pitch away your theism with your womanish religious sentiment, and reduce it all to the sublime confession of his inscrutable Ultimate, as far removed from intelligence and will as these are from mechanical motion.' 'Look now,' continued W., 'at your first objection, which deals with Mr. Spencer's ideas only. He said that his Ultimate Cause could not "in any respect be conceived" by him. That is one negation. He said also that he was "totally unable to conceive any such mode of being." That is another negation. But these two are inseparable—the Ultimate and its mode of being are welded together—and the two negatives make an affirmative. What have you to grumble at ?'

Here the reader will ask, 'Why set your friend W.

a-spinning logic to cover Mr. Spencer's work, instead of letting the preacher defend himself?' If he had done that for himself, I should not have presumed to throw my little shield over him. He has written nothing to indicate that he is aware of these two big rents in his coat. Plague on those farmers! Their stiles are bad enough at best; but if they have a young thing in the field, they block them up still more with perilous nails that tear you to tatters. It is lucky that W. put these pins in; the coat would else have trailed in the dust.

16. A third objection was stated thus:—'You proved to us, in your way (10), that all our theistic assumptions, influences, reasonings, and results, "in search for a Cause," are illusive; yet you preach plentifully about your Ultimate Cause (14) "of all known effects which we call phenomena." How can this be?'

A fourth objection. 'You tell us (14) that your "Ultimate Cause cannot in any respect be conceived by you," yet you express clearly your conception and conviction of it in every respect, both to yourself and all that you can think of in the universe, in respect of agency, operation, manifestation, causation, &c. (14). And in respect of intelligence and will, you, (14), measure scientifically and accurately its overclambering altitude upon your transcendentalimodometer. How can this be?'

A fifth objection. 'You forbid the ascription to your Ultimate of "any attribute whatever" (14). Yet in every predicate of yours about it there lies an attribute. Existence is an attribute. Overclambering exaltation is another. Causing, working, manifesting, ordering by laws—these are attributes. Times too many to number, you practise, without stint or shame, the degrading impropriety from which (14) you warn us all to refrain. A pretty way to preach the gospel!'

A sixth objection. 'You say, page 29, "Omnipresence is unthinkable" (14). Yet, in spite of your infallible test, you can abolish the distinction between sense and nonsense, and, in condescension to the religious consciousness, you are ready to preach the make-believe omnipresence (v. 14) of your ignorant, unconscious, inscrutable cloud-log. And when you have your splendid temple built to your over-clambering Ultimate, you will doubtless be eloquent to the tearful sisters about the comfort and consolation to be found in the assurance that "the Power in which they live and move and have their<sup>7</sup> being" (page 581) is One that can never know, although ever with them, by night or day.

'That cloud never had, nor will have, definition or consistency, either proximate or ultimate, except on that great morning when, becoming suddenly real and inlignate in the hand of Jove, it was hurled down rotating, whizzing, and splashing in the mud, to be the dirty monarch of the frogs. In many melting ways you will touch the religious sentiments; but on one point you are resolved—that no Cause, Power, or Ultimate of any kind, shall be either spoken or thought of, that either knows or purposes as much as yourself. The Omnipresent Inscrutable works and works and works through all the universe; but it does not know; it has no aim; it cannot understand. Knowledge is for us philosophers. We know; we understand; we purpose; we accomplish.'

A seventh objection. 'That your Ultimate Cause, as conceived by you, is an absurdity, appears from this. If it is ultimate it cannot be caused; *i.e.*, it is uncaused. But, by your theorem on page 37 (10), "If we admit that there can be something uncaused, there is no reason to assume a cause for anything." That is, your Ultimate Cause, by your own words, is proved to be either no ultimate or no cause.'

17. Here I begged leave to say something by way of an

eighth objection. 'You philosophise and preach about an Ultimate Power. Power, in every language used by philosophers, is I-can-hood. Force is not; it is the effect of power. And power never yet became ordered force in act, but through intelligence and will. We blame not the miller for talking of his water-power, instead of water-force. But it is unbecoming a man of science to confound force and power; and, in fact, this confusion is seldom heard in the halls of science or philosophy, except when the speaker is under a compulsion of negationist or sectarian kind.

'Every Power that is not merely styled a Power for a sinister reason—every Power either can or cannot do so and so, whatever be so and so. Then your Ultimate Power either can or cannot suspend its action for one hour over some selected region of the universe. If it cannot, it is under compulsion and is not ultimate. If it can, it can either of its own power, or else it can, but not of its own power. If it can by its own power, it is not (14) as far removed from intelligence and will as these are from mechanical motion; for it has enough of both to choose the region of its suspension and to effect its purpose for one hour. If it can, but only by the power or permission of another, it is not ultimate.

'This proves that your overclambering Ultimate Power and Cause without intelligence or will is all most puerile blunder and nonsense. You will of course reply that you describe your Ultimate not as lacking, but as "possibly" overclambering, intelligence and will. Yes, we all expected that. But who said—refrain from assigning to it any attributes whatever? (14). What is this overclambering? At your page 192 we read—"The sole truth which transcends experience, by underlying it, is thus the Persistence of Force." So there are two senses for the use of the word, overclambering by underlying, and overclambering by

overlying. Far be it from me to decide which is the more dignified posture or excess. If there had been one hint in your book that you teach an Ultimate Cause of the universe which knows half as much about the universe as Herbert Spencer, this criticism on your abuse of the word Power could not have been made.'

18. Mr. Spencer listened calmly, and courteously answered—'Gentlemen, all that you say appears to you to be good logic from your point of view; but it does not involve me in your difficulties, nor shake in any way my "Philosophico-Religious" work, in which of course I have both to demonstrate and to preach. I have never spoken of a Power that can or cannot do so and so. On the contrary, I have warned you that you are not to assign to the Ultimate Power and Cause any attribute whatever, whether it be will, intelligence, power, capacity, or ability of any kind. My Power has always a capital letter; you will look in vain in my pages about it for attributed power without one. You are losing yourselves in absurdities of your own making—and as to your irreverent allusion to the religious aim of my work, I leave you to the judgment of yourselves.'

We said to each other, 'the gentleman is determined that whether we accept his religion or not, we shall lie under no mistake about the thoroughgoing extent of his negations of every proposition of the belief in the Living God.' 'The curtain will soon rise,' said W., 'and we shall see our blind friend, deaf-mute Must-be, poor, old, ignorant, helpless, indifferent, unconscious, unpurposing Must-be; not as she is simply set up by straight-forward Atheism, but sandwiched between two shutters, before and behind gigantically labelled, the one ULTIMATE POWER, the other ULTIMATE CAUSE.'

Mr. Spencer spoke again, 'I feel that you all do me injustice in your way of looking at my great work. You fall

into the error for which I have rebuked Mr. Malcolm Guthrie in my Appendix ; you inquire what does this word or that phrase stand for, and you put in meanings for which I have not made myself responsible. If you will consider what I have stated in that Appendix about working my equations with my  $x$ ,  $y$ , and  $z$ , you will get the true point of view, and will see that the terms you criticise are merely the symbols by which I work my equations ; "and when the equation has been brought to its lowest terms, the symbols remain symbols still "' (page 578).

' When great mathematicians work their equations,' Mr. Spencer continued, ' they do not trouble themselves, whilst about that, with computed values of their  $x$   $y$   $z$  or of their  $a$   $b$   $c$ , which they manipulate with such masterly power. Thousands of memoirs of high analysis are written and admired by competent readers, in which no man ever thinks of bringing it to actual evaluation. No more do I. I go on, like them, just working my equations. Mere computers are men who don't know how to work equations, and computation is often done by machinery. If sometimes, as it happens, the value of a symbol comes out when computed to be impossible, does that diminish the glory of him that worked the equations ? Look at all those volumes of equations worked with my  $x$ ,  $y$ , and  $z$ . Not only Evolution but Involution. How much evolved, how much more involved, in those pages ! Look at my Differentiations and Integrations ; look at all that calculus of Operations, and that laborious calculus of Variations, "astronomic, geologic, biologic, psychologic, and sociologic" (page 566), over all the past vicissitudinalities and all the future Dissolutions and Evolutions of this infinite and eternal universe !'

I brought my friends out of the effect of this dazing eloquence by proposing that we should take the speaker's advice and look at his rebuke of Mr. Malcolm Guthrie in the

Appendix ; perhaps we might see some of our objections answered there.

19. At page 578 we read :—"It will scarcely be believed, and yet it is true, that Mr. Guthrie ascribes to me the vulgar conception of Matter and Motion ; argues as though I really think they are in themselves what they seem to (our) *my* consciousness."

At page 579 we read :—"Though I have repeatedly made it clear that (our) *my* ideas of Matter, Motion, and Force are but the  $x$ ,  $y$ , and  $z$  with which (we) *I* work (our) *my* equations and formulate the various relations among phenomena in such way as to express their order in terms of  $x$ ,  $y$ , and  $z$ , though I have shown that the realities for which  $x$ ,  $y$ , and  $z$  stand cannot be conceived by (us) *me* as actually existing thus or thus without committing (ourselves) *myself* to alternative absurdities ; yet questions are put implying that I must hold one or other hypothesis concerning these actual existences, and I am supposed to be involved in all the difficulties which arise."

Here we see this evolver of the universe standing upon the knife-edge that I spoke of (11). Here he brings his rays to a focus mathematically exact in  $x$ ,  $y$  and  $z$  ; and here we see the cruelty of this Malcolm Guthrie to this injured prophet, in demanding that, when he fills a big volume with algebra, the symbols he employs shall have some definable meaning. Which is greater, the blunder or the wickedness of this Guthrie, who blames Mr. Spencer for the nonsense which is entirely and incurably the fault of the  $x$ ,  $y$  and  $z$  with which he is compelled upon his knife-edge to work his beautiful equations ?

As I have again, in this page 579, made changes, described in (8), in the text of the author, and am greatly desirous to have the reader's approval, my most likely way to obtain it is to produce the most renowned of all Mr. Spencer's equations, from § 179 of his *Psychology* :—"That

an effectual adjustment may be made, they (the separate impressions or constituent changes of a complex correspondence to be co-ordinated) must be brought into relations with each other. But this implies some centre of communication common to them all through which they severally pass; and as they cannot pass through simultaneously, they must pass through in succession. So that as the external phenomena to be responded to become greater in number, and more complicated in kind, the variety and rapidity of the changes to which the common centre of communication is subject must increase; there must result an unbroken series of these changes—there must arise a consciousness.”

How easy when you know it! An unconscious mass, by putting into it a sufficient quantity of motion and must-be, suddenly becomes a conscious being! Mr. Spencer worked that equation out of his own head with his  $x$ ,  $y$ , and  $z$ . Am I bound to say—thank you, Mr. Spencer, for evolving that so beautifully from our ideas  $x$ ,  $y$ , and  $z$ , both mine and yours? How many of my readers are ready to say that? If few or none, I am justified in my rule (3) for reading this working of the author's equations.

20. There are seven clear and connected affirmations about  $x$ ,  $y$ ,  $z$ , made in this terrible rebuke of Malcolm Guthrie by Mr. Spencer:—

1.  $x$  is my idea of matter.
2.  $x$  stands for a reality, say  $P$ .
3.  $y$  is my idea of motion.
4.  $y$  stands for a reality, say  $Q$ .
5.  $z$  is my idea of force.
6.  $z$  stands for a reality, say  $R$ .
7. The realities  $P$ ,  $Q$ , and  $R$ , for which  $x$ ,  $y$ , and  $z$  stand, cannot be conceived by me as actually existing thus or thus, without committing myself to alternative absurdities.

A student, S., here said to him: 'I am eager to learn from you something about your  $x$ ,  $y$ , and  $z$ . To inspect those ideas of yours is no more possible for me than it is for you to produce them. You reject, first, the vulgar conceptions of Matter and Motion; you talk, secondly, of what you really think these two are in themselves, and, thirdly, of what they seem to your consciousness. All this is chaos to me. It is fortunate for me that, besides what is out of my reach, namely what  $x$  is, I hear of something for which  $x$  stands. I may, by studying the realities,  $P$ ,  $Q$ , and  $R$ , come to some knowledge of  $x$ ,  $y$ , and  $z$ , which stand for them. Can you kindly give me any light about  $P$ ,  $Q$ , or  $R$ , or inform me where and how I should look for it?'

Mr. Spencer replied, 'Your inquiry is already absurd, for it implies that I can do what I have declared to be impossible for me to do without plunging headlong into absurdity on this side or that, namely, to conceive any one of  $P$ ,  $Q$ ,  $R$ , as "actually existing thus or thus." How can I give you information which I cannot possibly have? You are falling into the blunder for which I rebuked Mr. Guthrie.' The student ventures to ask, 'Can I learn from you whether  $P$ ,  $Q$ , and  $R$  are or are not all alike?' 'Your question is again absurd, repeating Mr. Guthrie's blunder,' was the reply; 'it implies that I can without contradiction conceive two or more of  $P$ ,  $Q$ ,  $R$ , as "actually existing thus or thus;" for how can I know relations of identity or diversity among them without such conception?' 'But, I presume,' said the student, 'that you actually conceive that the reality  $P$  so exists that your idea  $x$  correctly stands for it—do you not?' 'Certainly I do,' was the answer; 'for I have set that down, and the seventh proposition does not hinder me; because what I have set down affirms my conception of  $P$ 's existence only *thus*, not *thus* or *thus*.' 'True, and very clever; and that is something gained,' said S.; 'and in the

same way it is evident that you conceive of  $Q$  as so existing that your idea  $y$  exactly stands for it, and of  $R$  so that your idea  $z$  correctly stands for it.' 'All that is true,' said Mr. Spencer. 'From this,' said S., 'we can prove that  $P$  and  $Q$  are different; for if  $P$  were  $Q$ , you would conceive  $P$  existing either thus—namely, so that  $x$  correctly stands for it, or thus—namely, so that  $y$  exactly stands for it; but by proposition 7 such conception of  $P$  is impossible to you. Therefore  $P$  is not  $Q$ , but different from  $Q$ ; and in the same way it is demonstrable that  $P$  is not  $R$ , or  $P$ ,  $Q$ , and  $R$  are all different. This falsifies the very learned answer that you gave me just now to my second question. Further, you conceive of  $P$  existing either thus—that it completes with  $Q$  and  $R$  the grand triad of realities for which  $x$ ,  $y$ , and  $z$  stand; or thus—that it is the only one of the three for which  $x$  correctly stands. That is, you do without absurdity conceive of  $P$  as "actually existing thus or thus." The same thing is demonstrable about your conception of the reality  $Q$ , and also about your conception of  $R$ . Consequently proposition 7, which affirms it impossible for you to conceive the realities  $P$ ,  $Q$ , and  $R$ , as "actually existing thus or thus," is false.

'Observe now, Mr. Spencer, what we have done. Starting with your affirmation that all these seven propositions are true, we have rigorously demonstrated that the seventh is a flat falsehood.' He paused a moment and then added, 'And that poor swagger of cunning and nonsense with your  $x$ ,  $y$ ,  $z$ , that poor thumb-twiddle of "thus or thus," with your "alternative absurdities," is your lofty rebuke of Malcolm Guthrie, who, by his patient and well-reasoned study of your volumes of sham Algebra, has done you most unmerited honour.' At this, as the student burst into high laughter, and as we all stood there with lifted eyebrows,

Mr. Spencer, without one word, walked straight away, his torn tail dragging behind him.

21. The student had proposed the sixth objection in (16), and one reproved him for his sally about the cloud-log, as wanting in the respect which is due to religious thought however defective. 'Respect and reverence?' he replied. 'Mr. Spencer's insult to his new religion is far more scandalous than mine. Look (18) at the evidence before you of his own sincere conviction that he is stating religious truth. Look at his three questions, "Is it not just possible?"—"Does it not follow?"—"And may we not therefore?" Be these prophetic tones—these crawling, broken gaspings? Consider the attitude of these three crooked little things. You may call it the hesitation of modesty, or you may see in it the crouching tension of mischief, resolved yet afraid to do it, and prepared for instant flight and denial. Did he ever read the 19th Psalm? There are no affrighted notes of interrogation there. When he can roll out a strain of power like that, glorying and kindling, convinced and convincing—to the honour of his stupid, overclambering Ultimate, we will hear him again. We shall then be all converted and sing with him—There is no God but THE ALL-IGNORANT, and our knowing Herbert is its prophet.'

I have now finished my study of this great conquest of the universe. For my irreverent banter and laughter I expect to be censured; for misrepresentation or suppression I fear no candid blame. For the rest, as I am quite certain from long experience that neither Mr. Spencer nor any of his disciples can ever have the pleasure of replying to my logic, I think I have done right in securing to them one comfort, in complaining of my laughter.

22. My friend W. next asked, 'Can any of you produce a sentence from Mr. Spencer's writings in which he clearly denies the existence of a purposing and intelligent Author

and Preserver of the universe, with or without logical reasons for such denial? The drift of his argument is clear enough, as also is his intention to win the applause of that large class of readers who desire to see overturned the old belief in a living and all-knowing Creator, Ruler, God, and Judge.' When none of us could produce the direct denial for which he asked, W. went on to say, 'In an article by Mr. Spencer, in the *Nineteenth Century* of February, 1884, at page 6, he quotes Mr. F. Harrison thus:—"He (Mr. H.) says, 'Of all modern theologians, Dean Mansel came nearest to the Evolution negation. But there is a gulf which separates even his all-negative deity from Mr. Spencer's impersonal, unconscious, unthinking, and unthinkable Energy.'" "It is quite true," rejoins Mr. Spencer, in the next line, "that there exists this gulf."

'Here,' continued W., 'is what is fully equivalent to the explicit denial that I ask for: here Mr. Spencer accepts as quite true Mr. Harrison's description of his teaching about this energy—this "Infinite and Eternal Energy, manifested alike within us and without us, and to which we must ascribe, not only the manifestations themselves, but the law of their order" (page 25)—that it is an unconscious and unthinking, as well as unthinkable Energy. And there is nothing in this article of 26 pages of reply to Mr. Harrison from which it can be inferred that Mr. Spencer is willing to ascribe consciousness or thought of any kind to this "Power that is omnipresent" (page 25); nor is there one word of complaint that Mr. Harrison, in using the words "impersonal, unconscious and unthinking," misrepresented Mr. Spencer's teaching.'

23. 'As to the logical arguments for this negation,' said I to W., 'for which you ask, I never heard of any besides the accusation against believers in God, that they are all manshapers and man-magnifiers. The disciples of these

prophets of every agnostic or atheistic school never ask them for another reason or reply. They are all rich—fabulously rich—in philosophy and logic by their possession of the one Greek word *anthropomorphist*. They all feel that there is neither need nor room for other argument while they can roll out that conquering nickname, whether negroes or Newtons be their antagonists. But where is the man, or even angel, whom I am shaping or magnifying to myself when I confess my faith in the Omniscient, Omnipotent, Omnipresent, Everlasting, without body, parts, or passions, of infinite power, wisdom and goodness, the conscious and purposing Author of all Force and Life, the Maker and Preserver of all things, both visible and invisible? They all alike howl out at this—manshaping! anthropomorphism! How long will their utter poverty of thought save them from being ashamed of this slander?’

What can be the reason why every atheist makes the same sort of a noise when blowing his learned or unlearned, his noble or ignoble nose? Simply that the order of nature has thus far made it impossible for the greatest genius among them to discover any other way of relieving that organ under difficulties. And why is it that every atheist, whether shining in first magnitude in our fashionable monthly journals, or smokily gleaming in the *National Reformer*, when civilly asked for a reason why no Cause of the universe is to be tolerated which knows as much as he does, is compelled to content himself by producing for answer, in Greek or English, the whole of their common wealth of argument in one poor, worn word—manshaping? Simply because they have thus far all found it impossible to invent any other phrase which can even pretend to stand for a reasoned reply.

We are all bound to make every possible allowance for ignorance and heated imagination, whether in the poetic

licence and self-conceit of certain hymn books, or in the yells and negations of anarchy; but this accusation of manshaping, when deliberately made by our polished Matthew Arnolds and Herbert Spencers against Theists who are hardly their inferiors in mental power and culture, is, in every page and every company where it is uttered, insolence as coarse and as base as it is easy: it is calumny both false and foul.

24. In (21) I have spoken of 'mischief prepared for instant flight and denial.' The reader can determine how far I am justified in this by referring to what Mr. Spencer has written at page 25 of the article quoted in (22). And he will perhaps agree with me in thinking that this feebleness, together with the sophisms exposed in this paper, will soon indite for Mr. Spencer an epitaph of "consuming passion" and "colossal vanity" no less emphatic than the one which, with commendable scorn, he has written on page 11 of the same article in the *Nineteenth Century* upon M. Comte.

Let me recommend to readers who care for such topics, this reply and rebuke to Mr. Harrison from Mr. Spencer in the *Nineteenth Century*, February, 1884. Nothing can be more edifying than to see the latter throwing off all the reserve of negationist loyalty, and chastising the great prophet of the former and his churches, with their angels and all their works.

Nothing contributes more to the advancement of real science than the quarrels of our Comtes and our Spencers. The old proverb is as true in logic as in economics, that, when gentlemen of a shady character fall out, honest men may come by their own. My topic here is not economics. In logic I say—*Floreat honestum*.

ON THE THREE ZEROS NECESSARY, *A PRIORI*  
AND TRANSCENDENTAL; OR—AN ENQUIRY  
INTO THE PHILOSOPHICAL VALUE OF THE  
WORD NECESSITY, USED WITHOUT AN IF  
IMPLIED OR EXPRESSED.

BY THE REV. THOS. P. KIRKMAN, M.A.. F.R.S.

IN a former paper I have ventured to say that the sophism, *non datum pro dato*, makes nonsense of all that the famous philosophers Spinoza and Kant have built on it. The former was as far as Mr. H. Spencer from believing in an all-knowing and purposing Cause of the universe. He talks about the Infinite Knowledge of God; but he clearly means thereby only the sum of all the thought and knowledge that is, or that ever was or will be, in finite minds, and includes in it all that is or ever will be possibly so knowable, though for ever to such minds unknown.

Kant was a true and devout believer in the Living God, the All-Knowing I AM, eternally existing, and adorably working and ruling in the fulness of His Infinite Perfections.

Both Spinoza, in teaching his atheistic Pantheism, and Kant, in building up his transcendental philosophy and his discoveries about *perseity* and *das Ding an sich* (things in themselves), lay down the same two corner-stones. The first is *necessity*, the second is *conceivability to me*, by which Mr. H. Spencer has conquered the problem of the universe. Of this sophism, the *non datum pro dato*, I have nothing here to add to what has preceded. My topic for a few pages is Kant's *necessity*, which is, of course, that of all matter-and-must-be philosophy.

The theorem, out of which Kant's transcendentalism is all made to flow, is thus given, in the second article, page 8,

of his Introduction to his *Critik*: "Whenever a proposition is conceived *by me* together with its necessity, it is a judgment *a priori*." "*Findet sich ein Satz der zugleich mit seiner Nothwendigkeit (von mir) gedacht wird, so ist er ein Urtheil a priori.*"

In the first article of the *Transcendental Æsthetic*, p. 25, and in the second article of the *Transcendental Logic*, p. 58, he makes this *a priori* completely form the definition of the Transcendental, *i.e.*, of the Overclambering. I have added *by me* after Kant's word *conceived* (*gedacht wird*, the oft-repeated *concipitur* (*a me*) of the sophist Spinoza), and have proved my right to do this in my preceding paper. To these foundations I shall in the sequel return.

My purpose now is to establish the proposition following.

*Prop.*—Whenever the word *necessary* or *necessity* occurs in a philosophical page, without an *if* expressed or implied, and as bearing all the sense of its equivalent *unconditional*, it is a null word, a pure zero, because it adds nothing and subtracts nothing; it compares, contrasts, and defines nothing; it describes and arranges nothing; it explains and answers nothing; it teaches nothing and suggests nothing, except the pretentious emptiness of learned verbosity. I do not add that it serves to deny nothing, or is not a useful tool of sophism.

It is futile to ask for a plain definition of the word *necessary* or *necessity*. Yet, oddly enough, Kant, who seems to dislike definitions, volunteers one of necessity thus (§ 11, following his Table of Categories): "Necessity is nothing else than existence which is given by possibility itself (or by simple possibility). *Die Nothwendigkeit ist nichts anders als die Existenz die durch die Moeglichkeit selbst gegeben ist.*"

If the reader has ten times my brains, he will learn from this ten times as much as I. I have learned nothing.

Possibility is defined and given by *ifs* and conditions; unconditional Necessity is defined and given by Possibility!

I have no fault to find with the word necessary, used to denote what is required for a purpose in view, as when one says—If you wish to shave pleasantly, it is necessary to use a good razor. But the word here bears hardly the sense of unconditional; for unconditionally necessary if—is something like a contradiction. Nor am I considering logical necessity, whereby a conclusion is soundly drawn from granted premises, be they true or false.

For the demonstration of my proposition I require, besides easy appeal to facts, only a lemma which includes it, and which is not new. I write the lemma, or if you will allow it, the axiom, thus:—

*Lemma.*—In every field or universe *F* of finite thought, expressible in clear propositions concerning *data* given alike to two debaters, a quality or predicate *A* (not standing exactly for—in this field *F*), affirmable of given things, which is not in company with a non-*A* affirmable of other given things in the field, is a mere nullity of no value in scientific research, and a cumberer of philosophic enquiry in that field.

I have said that this is not new; but as I cannot produce a passage from any good philosopher which exactly lays it down, I must for the present bear the responsibility for it. Its main truth, but not the whole, has long been compressed into the two capital sayings: “this is a truism,” “this is a barren generality.”

Yet, if you agree with me in the sense of one word, you will allow that it is laid down by Professor De Morgan, at p. 307 of his *Life* by his widow, thus:

“To Professor Alexander Bain. My dear Sir,—I quite coincide in your view as to a quality being unthinkable except in company with its *non*. I forget where I said, long ago, that every name desig-

nates every object of thought as being either *in the class* or *out*; but I did say it, and the equipollence of X and non-X is the foundation of completeness even in common syllogism. . . . Yours very truly,—Augustus de Morgan."

What does De Morgan mean here by unthinkable? If he uses it as Spinoza, Kant and Herbert Spencer do, for inconceivable to him in his secret cell of consciousness, I do not deny that it was to him so unthinkable; but I decline in all debate to consider that fact as *given to me*, and if it is so offered I call it the sophism of *non datum pro dato*. If he calls this X in company with no non-X unthinkable, because it helps us nothing in thinking, nor is presentable in the shape of reasoned thought in written science, I consider that my *lemma* is substantially his. He plainly affirms that X without non-X is outside good logic.

If you can say of a number of objects in a complete field of finite thought, this is A, that is A, and the other is A, but cannot find one there of which you can with equally good reason affirm, this is non-A, your predicate or quality A is a silly and useless word in that field before philosophy. And why silly? My answer follows the *because* written in my Proposition.

We are studying the terms *necessary* and *necessity* as they occur in philosophical pages without an *if* expressed or understood. I know of nothing definite that is so laid down as *necessary* which is not either some propounded truth that ever abides without change, and therefore without causation, or else some true statement of change at given time and place, that is, of some event, great or small, seen or unseen.

Where are we to look for examples of necessary truth? Ten thousand voices answer, in the propositions of mathematical science. We all know that no common-place is more threadbare in learned books than this—that the theorems of arithmetic and geometry have, besides the glory of

being exactly true, the greater glory of being true by and of necessity, which is perpetually more than being exactly true.

I beg one of my friends to write down a few of these truths, with his affirmation that all are both true exactly and true of necessity. He kindly complies. He writes first Kant's famous overclambering example of the synthetic judgment *à priori*,  $7 + 5 = 12$ , and next, a few theorems from the higher Algebra; and, being a deep metaphysician, he adds—Everyone of these is not only accurately true, but true of necessity—a necessity inherent in the very nature of things.

I thank him, gravely assuring him that I am as clearly convinced as he that this is so. Next, I beg him to write three or four examples from the same mathematical field of thought, of propositions which are equally true, but not true by any necessity, either sticking in or sticking out of the very nature of things. He is beaten. He gives it up. He can produce examples in plenty from this field of—this is A; but not a single one of—this is non-A.

I then read to him my *lemma*, and ask for his objections. He does not admire it. He is silent.

A sharper friend observes—You have no right to confine us, in our search for a non-A, to the mathematical field. Very true, I reply. I grant you the whole universe of given truth that abides without change, and therefore without causation. Then I said, as nothing came of it, and as no non-A was thought of:—

We turn next to the field of given change or event; and as future events are hardly quite given to any of us, while present changes become the past before we can speak of them, we first confine ourselves to the necessity of past events.

At my request my friends write down a few true and necessary statements of past events, celestial and terrestrial,

with the time and place of each well defined. They do this. They write down in addition—each of these affirmations is a necessary truth, and every event stated occurred at its time and place by equal and inevitable necessity. I thank them, and assure them of my conviction that if the antecedents of any event named were given to me, with all the forces and volitions acting and issued in that place up to the moment of the event, I should plainly see and know that it was then and there impossible, either that the event should not happen or that it should happen in any other way. So we were all agreed that each of those past events had occurred certainly and inevitably, or if you prefer it, of necessity, under the actual causal conditions at the time and place.

I next begged my friends to write down a few events from the vast field of the past, of each of which they could say, this certainly occurred at such a time and place ; but, looking at the fact from our position at this moment, and considering as taken into account all the conditions of forces and volitions up to that moment of the past, we affirm that it did not then and there happen of necessity.

They again gave it up ; they were able to produce cases innumerable of—this is A ; but not one case from the entire field of the past of—this is non A ; *i.e.*, this verily occurred, but not of necessity.

It was remarked that the most important judgments of science about necessity are often those pronounced concerning future events. I placed at their disposal the whole universe of the future. But I ventured to say—No future event is given to me scientifically in time and place. I am confident that the tide flowed yesterday, and that it inevitably, or if you prefer it, of necessity, reached at the full a known height and no more. About that past certainty there is no room for any if. All that I can affirm of to-

morrow's tide is that it will surely reach the predicted height, if the cosmic forces are maintained so long in their present energy and order.

I know that many philosophers hold it for their chief glory to have, like Mr. Herbert Spencer, overclambering intuition or demonstration, whereby they can predict future events both with truth and with this necessity in time and place. This can be fairly tested—thus. Every man will allow that to him, as a student of this matter for a little season, no question of future event is of closer importance than this—Shall I be a living thinker in this planet two hours hence? I begged any of my friends to favour me with his scientific knowledge on that point without any ifs; and to write down his prediction in terms both of certainty and necessity. Not one complied, nor could they name to me any other who was able to do it. I asked them if from their knowledge of life and of chemical and physical forces, they could, without any violence, answer the like question about the life for an hour of a little fly or of a feeble worm. They all gave it up. Their power of certain prediction came to very little.

These gentlemen were in possession of grand First Principles about the future. They knew all about not only Evolution, but also about Persistence, Continuity, Conservation, and Uniformity. These terms are useful in framing a working hypothesis, and in theory such as suffices for our rough approximations; they are always the same words, so that we can swear to them again, as in every letter the same: all this is persistent and uniform enough; and when a man has read and used the words Persistence and Uniformity thousands of times, he is apt to feel impatient of critical enquiry.

These terms are proper expressions of our belief in the perfection of what we call the laws of nature, that is, our

conviction that there is no caprice, hesitation, or mistake in the Energy of the All-Wise Cause; and we can make no beginning at all in science without assuming order and regularity in the sequences of change during the period considered. The terms are not expressions of what we really know with demonstration. To such knowledge we have no way but by observations, hypotheses, and predictions thereon founded, followed by comparison of our predictions with subsequent observation of the facts. Now, our observations are mere approximations; you cannot read your thermometer, barometer, or other instruments, to exact thousandths of an inch, even with your microscopes. Your predictions also, with all your mathematical skill, are only approximations, as are your subsequent comparisons with facts observed. And you are never sure that the contingencies and disturbances in results, which are due to what is near and afar off, and which you are compelled to neglect, are the same at any two moments of observation.

But the force-centres are held to be working out of our sight with perfect regard to all contingencies at every instant; and they work correctly to millionths of a hair's breadth. It is, then, no wonder that we can never verify in the facts observed by us the uniformity of changes in which we believe. We can thus never prove that the cosmic energies have, as some say, repeating cycles, or that they have or have not a constant sum.

Who ever saw two actual results of dynamical forces, *e.g.*, two sand-ripples, or two products of vital forces, *e.g.*, two beech leaves, or two chickweed leaves, proved to be alike even within our poor means of thorough examination? The works of God, so far as I have been able to observe and compare them, are like those of an artist working with a free hand and with infinite skill and ease, uncontrolled by any mechanical constraints of uniformity. In the products

of our machines we have a near approach to uniformity, as in new farthings and Whitworth's screws, but it is not perfect. And in what surely most nearly concerns us men, pertaining to the past, in the recorded irregular course of human progress, what is there at all like your cycling and repeating uniformity? And is not the history of our own race the grandest fact of all God's known evolutions, both in science and religion?

It may be said by unscientific observers that there is uniformity in the fall of a stone, *i.e.*, that the same path will be described in every fall of the same stone from the same height. I do not believe that this could be proved, if we had the power to compare accurately positions of the path of any one such fall, or the paths of repeated falls of the same stone, with all their variations of rotation and oscillation. No man of science will allow that it is more likely that a stone, under the disturbances of innumerable things near and far off, can describe for two seconds the same vertical line in its fall, than it is possible for the earth to describe for one day the same ellipse. What astronomers call the instantaneous ellipse, at the time  $t$ , can be drawn with any accuracy required; but the earth's centre has left it, and has described arcs of many another before a day has expired. There is no more real uniformity in the paths of a shower of stones descending after discharge from a volcano, or after release from the whirlwind's grip, than in the paths of the dropping snow-flakes, or of Jupiter's ever-falling satellites.

And if this be true of the changes going on in the world of what is called matter, apart from life and mind, it is true with far more confusion to our matter-and-must-be-doctors, in that of consciousness and intelligence, by much the most important to us; and in the movements of living beings, from the smallest fly to the noblest Seraph. The wondrous

energy of will, the seamless and inseparable robe of free will, however limited be the sphere in which it is worn with effect by all that lives, must be brought with scientific proof under the dominion of mechanical law, before those matter-and-must-be doctors can show any reason whatever for their wild dogmatism. And this unsearchable gift it is, in life both below and above our human plane of responsibility, that as it works, transforms and conquers, will ever mix doubt and darkness with the wisdom of those who are so pleased with their saw—Must-be-so :—We know—and with their little philosophical toys of Persistence and Uniformity.

They will of course reply—As to free will, that is all barred out and tabooed. We are unanimous to ignore that both in man and in all conscious agents, inferior or superior to man. We abstract from that; we shun the very sound and sight of that, when we are talking science. Yes, so they do. They put their learned heads where the ostrich puts hers. And little harm comes of it. Oh, I do like to hear these philosophers talking science in their sand-caps. For, when their caps are off, when their heads are above their shoulders, and they are talking sense, they behave from morn till dewy eve, and require others to behave, exactly like sober, reasonable, loving and responsible people, just as if the silly debates about liberty and necessity had never been heard of.

Wonderful and fertile in crime and cruelty are and have been the strifes and contradictions of human thought, in the states, in the churches, and in the schools. We may reasonably believe that they have done much good as well as much harm. And still we hear the quire of God's ages chaunting, as they unroll for their march into the infinite past, chaunting above the storm of passing evil and nonsense, the grand and ever-waxing epic of social, intellectual and spiritual progress, that has come and is still coming, not

forced into, but brought out of, the groaning struggles of passionate freewill with God's unrelenting and ever-teaching laws. I believe that progress and bliss beyond my power to conceive are coming for all the immortals of this and millions of other training grounds, alike under one rule of perfect justice and mercy: and this faith, together with the wonderful discontinuities in the great domineering forces of the past, such as the abolition, after empire for thousands of years, of human sacrifice, and of slavery, which the noblest thinkers long held to be an institution in force for ever—this faith, I say, confounds and belies the nursery science and sing-song of persistence and uniformity that finite thought can verify. The pace of this advancement may seem slow to us; but what judges are we of the education of races and of worlds, or of time reckoned in milleniums? This must be a very juvenile planet in which Auguste Comtes and Herbert Spencers can be idolised.

After this somewhat long digression on supposed First Principles touching the future, I return to the remark of my friends, that the judgments of science, stated with necessity, chiefly concern future events. I made no demur in granting to them their Persistence, Continuity, and Uniformity. I merely showed my inability to see how they gave a steady sense to them that agrees with leading facts of the past that most concern us men, however they may plume themselves, and constantly amuse us, by affecting to ignore them—I mean the facts on record in the actual evolution of human thought and law, so different from the facts of lower life. I contented myself with defying my friends—whether their persistencies and uniformities were or were not conceived to hold for the future—to predict any event of the following day, which they could, on its occurrence, or at a future time, show to be the non-A required, that is, an event actually happening at its predicted

time and place, but not happening by what is called necessity.

I said, if we are all alive the day after to-morrow, we shall be quite sure that every event of the preceding day occurred, under the conditions of acting forces and volitions up to that moment in that place, with not a whit less of this necessity than that which we here all ascribe to every event of yesterday.

To this there was no reply. They were able to predict any number of changes which they were convinced would occur on the morrow, of which they could affirm this will be A, and that and the other will be A, but not a single event or change of which they could say—this will surely happen and will be non-A.

My Lemma and its included sweeping Proposition remained unassailed. I leave the conclusion to the thinkers who may kindly consider them at leisure in the light of this little discussion.

And now let me ask, no matter whether I be in the right or in the wrong, what difference in the world does all this make to any one of us, in our conviction, when our heads are above ground, that we are verily accountable and responsible beings, who with reason unconquerable expect for ourselves, and have the right to deal to each other, praise or blame for the past, with due reward or punishment by righteous order and law?

I have thus far spoken of one case of A not in company with non-A, and I may reasonably be asked for one or two more. These I am content only to suggest for your further meditation. The phrase *by* or *in the nature of the thing*, is, I think, of this useless kind and of null meaning. In my former paper I spoke of a master communicating to a fit audience what he knows of a pebble or of a sponge. If, instead of a master, the speaker were only a talker, he might

be pleased to add, after every truth laid down, this is true, and, moreover, true by the very nature of the thing; and so on, till some of us came to be tired by such repetition of his knowledge, not only of the thing, but of its very nature. One of us might be tempted to ask—can you tell us anything that you know about the thing that is *not* true by and in its very nature? Do you think that any proposition, whether now known or not, can ever be true about it, which shall *not* be a truth by or in the nature of the thing? We might have a little laugh to see him thus knocked off his stool, and compelled to see that he had been displaying his deep learning about an A never found in company with non-A.

Another word of this kind which has become shockingly tiresome in the discourse of many philosophers is the word *law*, which they repeat and repeat, as they preach about this realm and reign of law, while they are unable to write down any law whatever but one, which can help us to follow in thought from point to point and from moment to moment the changes going on around us. The law of gravitation is the only one that covers and gives account of any really continuous sequence of change in time and space. It would be a good thing if somebody would ask those gentleman when they are so prodigious on their knowledge of law, of which they can write down next to nothing—Is there anything going on, or did anything ever go on in the cosmos, observed or not observed by man, which did *not* through its minutest variations go on by law? You tell us this is law, and that is law, and the other is law, while you are unable to formulate more than one working law that, in exact science, covers one foot of space or one ten minutes of time; but can you show us something that goes on *not* by law, or *not* according to law? The philosophers might come to see at last that they are wondrous wise about an A which is never found in company with non-A.

I have spoken of the way in which philosophers often ignore the reasoning will of themselves and other men, as well as the will, memory and judgment evident in inferior animals. I may be permitted, without giving offence, to read a few sentences from the Address of the President of the British Association, delivered on August 31st last, at Manchester, and in my hand, printed by Spottiswoode & Co.

"In the year 1837 we were as ignorant of the mode of action of atoms, and as incapable of explaining their mutual relationships, as were the ancient Greek philosophers."

As this is science, we conclude here that chemists are not now quite ignorant of the mode of action of atoms. They have beautiful and exact formulæ of their relationships, as to their combining proportions in compounds in repose. May I ask whether anything is known of this action at the critical and wonderful moments of combination; for example, when water suddenly becomes ice or steam, or when the two gases, in that swift hurricane of fire, suddenly clash into particles of water, is the mode of action of the atoms, chemical or ultimate, at all known? I do not believe it is; nor anything else of such action in time and space given.

I read on:—

"Fifty years ago . . . the idea that the functions of living beings are controlled by the same forces, chemical and physical, which regulate the changes of the inanimate world, was then one held by only a few of the foremost thinkers of the time. Vital force was a term in everyone's mouth, an expression useful, as Goethe says, to disguise our ignorance, for

'Wo die Begriffe fehlen,  
Da stellt ein Wort zur rechten Zeit sich ein.'"

That is—let German scholars pardon my translating it—"the proper thing to do, where you have no clear ideas, is to fill

up the gap by sticking in a word." The cynical fiend, in the Professor's cap and gown, is here giving a lesson to the student in the right use of words.

I read on: "Indeed, the pioneer of the chemistry of life, Liebig himself, cannot quite shake himself free from the bonds of orthodox opinion . . . but makes an appeal to vital force to help him out of his difficulties. According to Liebig's views, in the body corporeal a continued conflict between the chemical forces and the vital power occurs throughout life. We now believe that no such conflict is possible, but that life is governed by chemical and physical forces, even though we cannot in every case explain its phenomena in terms of these forces; that whether these tend to continue or to end existence depends on their nature and amount, and that disease and death are as much a consequence of chemical and physical laws as are health and life."

Again, from the words "we cannot in every case explain the phenomena of life in terms of these forces," we clearly conclude that the learned President claims to be able, in some cases at least, to explain before science the phenomena of life in terms of these chemical and physical forces.

If he had here made no claim, he would have said—although we cannot in *any* case explain the phenomena of life in terms of these forces.

If this claim is established, there must be witnesses in this hall. Will one of them kindly stand up and declare to us his belief that this President is able before stern science so to explain, in terms of chemical and physical forces, one single phenomenon of life in one day's growth of the meanest fungus or conferva?

There were men of science there, more than one, who as they walked home said to themselves, 'In me there is life,

and life-power or vital force. The noblest function of it is the free-will force by which I am holding myself erect; another is that wonderful force whereby my blood is now rapidly rushing upwards from my feet. These are not the same forces with those that regulate the changes in the inanimate world. Neither is controlled by the force of gravitation; both are controlling it.'

I believe that these elderly gentlemen, thus flatly contradicting the articles of the learned President's creed, were thinking truth and science to themselves. The President was persuaded that they were all practising, with that blundering Liebig, the lesson of the devil in *Faust*, and concealing their ignorance by the word life-power, instead of displaying wisdom like his about the chemical and physical forces of the inanimate world.

The President seems to speak extensively of chemical and physical laws. It is to be regretted that the word law is often used to express a single isolated truth. John Stuart Mill tells us that when, for the temperature at which water boils under a mean atmosphere by the sea we write  $212^{\circ}$ , we write down "a law of the nature of water." Many such truths have been discovered, some by good logic, and more by good fortune, which are generally separated from each other by mountains and oceans impassable of ignorance, and, above all, ignorance concerning life and life-power. Not one of these foremost thinkers of the day can write down one law, or combination of laws, that shall give an accurate account to science of the forces at work, or the continuous changes going on, for any two minutes in any cubical inch of any living body in the world, after either poison or wholesome food. Yet I do not deny that the word *law* is often useful to denote the averaged result of observations.

Before the lesson here read to us about life and the forces at work in the inanimate can be considered as a scientific

lesson, it must be stripped of a little rhetorical personification ; for science can listen to nothing about forces which is encumbered by tropes.

We have to enquire as to these three assertions, "the functions of living beings are controlled," "life is governed," and "the changes occurring in the inanimate world are regulated," "by the same forces, chemical and physical," first, whether the terms *controlled*, *governed*, and *regulated* stand for the same thing or not ; and, if they do, secondly, what it is.

The word *regulate* is from *regere*, and I am not aware that the meaning of *regere* either comes short of or exceeds that of our *control* or *govern*. We conclude that the three verbs, regulate, control, and govern, mean the same thing. What is it ? This is easily seen ; for the chemical and physical forces that regulate the changes in the inanimate world are exactly the forces which *cause* those changes.

When we study a change, we look for a force or a resultant of forces ; and, when we have hit upon the right one, we register it as the proximate physical cause of the change, which both causes and regulates the change : regulating and causing are here the same thing.

Yet we may not know, in registering the found force as the cause, what is the law of the force's action. Thus it was divined that the motions of the planets were caused by a force directed to the sun, before the law of the force was known. That law was afterwards revealed to man through the intellect of that mighty prophet of God, Isaac Newton.

It is clear, then, that the verbs, to *control*, to *govern*, and to *regulate* all stand for to *cause* ; and the only shape in which this teaching of the President can be laid before science is this :—

"The functions of living beings are caused, and life itself is caused, by the same forces, chemical and physical,

which cause the changes occurring in the inanimate world.

If that were presented to us as science, we should all confess it to be a wonderfully neat simplification; but for the rest we should prefer to wait for some faint prospect of a reasoned proof that it is true. And for proof of high presidential science like this it is worth our while to wait for a reasonable time. Let us, then, all wait for ten thousand years.

I have no doubt that a good hair-splitter can make objections to my rendering of these three words of the President. With all my heart: he may split away. But it is my experience that when hair-splitting has to come in it is not science that is before us; much less what this pretends to be, the very grandest science about the operation of the chemical and physical forces of the world inanimate.

With these tropes and this handy stop-gap *functions* before us, we might easily open a wrangle without end. Are the knowledge, purpose and ordered work in cities and ant-hills among the functions of living beings? And the longer the dispute and bafflement endured about what all this means in science, the more we should be compelled to admire the success of these pretty variations upon that dodge of Goethe's devil, so aptly quoted by the President; while he could well afford to smile in silence, recalling to himself the next couplet but one of Mephistopheles:

An Worte laesst sich trefflich glauben;  
Von einem Wort laesst sich kein Iota rauben.

This way of handling life and its functions is doubtless acceptable to a minority of thinkers (not all, I hope and trust, of quite the same hue), many of whom, at least as specialists, are eminent philosophers. These gentlemen, if not, as they seem to believe themselves, the foremost

thinkers of the day, are at present the front of the fashion ; and that is a big thing. It was a big thing, and a beautiful thing to see, at Manchester, in August last, when that host of Lancashire witches, those infallible judges of what is the fashion, rained influence from lovely eyes on their handsome President, and drowned him in the incense of their applause.

Perhaps the most remarkable words above quoted are these—"We believe that no such conflict is possible." The speaker had been poking fun at the famous Liebig for affirming that in the body "a continual conflict between the chemical forces and the vital power occurs throughout life"; leading in some cases to health, and in others to disease.

Is it wrong to affirm conflict between the forces at work in the inanimate, as, *e.g.*, between fire and water, between the lightning and the tower, or between colliding trains or steamers? If not, why should conflict be impossible in the human body among the same forces, or between them and vital functions? We may not say *vital power* or *force*. What is there to control where conflict is impossible? Among the many harmful conflicts in the body in the course of life, of which Liebig thought, can we doubt that one was that of indigestion, brought on by habitual excess in eating and drinking? Is there never anything like baleful conflict between the digestive function and the chemical forces of substances that ought not to be there? "No such conflict is possible" says our learned President without reserve. It is a painful thing for me to see him contradicted by so many doctors. But, even if he be here in the wrong, I must insist on their paying him that respect which is clearly his due when he speaks of himself. Here he is not merely reciting his creed; he is telling his experience; he is prophesying. His words cover his present and his future. His sweeping negative certainly includes this—No such conflict is possible, now or ever, in me, the President of the British Association.

Wherefore I call upon all the doctors and upon all my readers to rejoice with me and that Association, that our gifted and genial President is endowed with such a glorious constitution, that he is perpetually exempt from all possible conflict between his digestive functions and the chemical forces of either solids or fluids that he may consume, in any mixture, or in any amount.

I have thus far treated this quotation from this Address as if it were presented as serious science. I may be rebuked for this; because not even a shadow of a promise of proof is offered with it, as either producible or conceivable. The President merely says—We believe. And he does not add, as so many of my cloth are prone to do—and you must all believe too, on pain of eternal ruin, by the Act of 2 Elizabeth. The stepping-stone was laid—no more. I might have said, I believe also, and have taken the step, with this advantage, that I should have been in position to take a second step towards some grand affirmation, or some far grander negation, approachable only by steps of simple faith, all equally with the first unreasoned and unreason-able.

We are probably all of us convinced in this Philosophical Society, that the number of persons in this very young world, who have adopted a conclusion from confident and unreasoning authority, far exceeds that of those who have thought their way to it by sound argument. Hence it is plain that, if the aim of the President was to make converts, he took the wisest way to it by his simple We believe.

But I did not go there to get converted. For that I am too old and too hardened. I went expecting the pleasure of hearing an eminent man of science on subjects which he knows thoroughly and which I know imperfectly or not at all, and also on subjects which no man knows thoroughly, in his report, without brave flowers of rhetoric, of progress made

by scientific investigators. And these two pleasures I had from various parts of his very able address.

But on the opening topic, called the Chemistry of Life, a phrase, to my ears, just as scientific as the Anatomy of Life, I was put off with a "we believe," without the faintest pretence of a reason. On this subject of life and the forces at work in the inanimate, which to me, as a thinker, in these days of self-satisfied negation and scorn of logic, was the most important of all, my questions why and wherefore, as I listened to that strong-scented orthodoxy, were answered by a *creditur, pie creditur*; exactly what the holy men used to say long ago at York and Chester, and what they are now saying with profit and applause in thousands of magnificent sanctuaries, when they allow you to look at their precious lump of the true cross.

I remember how, when I was a youngster, I was attracted by allusions that occurred in my reading to the great philosophical battle between Liberty and Necessity. How I longed to have that debate before me, and to be able to understand it! I have since learned that no such battle was ever fought. The latter combatant never had any existence as a debater in the halls of sane philosophy. For a debater heard there must have something positive to say, whereby we can be helped to compare, contrast, and arrange the objects of our thought, and thus to make useful propositions about them. But, if my argument about my lemma and proposition is sound, the dumb and burly beadle, black Necessity, that wears such a terrific turban, and struts with that mighty staff, in the halls of what has been called philosophy both sacred and profane, can give, and has for the last ten thousand years given, no aid whatever to logical thinking or debating. Useful indeed he is, both to hot believers and hot unbelievers, but for one duty only, to which they have trained him well.

When they are celebrating the sacred rites of Negation, in one chapel negation of reason, in the other negation of religion, they take care to have this huge flunkey posted at the door with his club, to prevent the intrusion of fact, of conscience, of merciless logic, and of laughing common sense. The two chapels hate each other cordially; but in this they agree, that the only trustworthy guardian of their grandest solemnity, furious Negation, is this big negro Necessity.

I have spoken of Necessity, and of the nature of a thing; and of the latter the President also has learnedly spoken. Let me now say something of another name in very frequent use with a capital N, of an unconscious agent that is spoken of as doing an enormous amount of hourly work, and whose sphere of action is in the minds of too many good Christian people very dimly distinct from that of our friend Necessity. I mean the word Nature, not as before with a small *n*, but generally with a capital.

Early last summer I heard an English lady of education and breeding regret that in the circles of German society, in which she had been moving in a German city, there was so much atheism, or what to her appeared to be such. She was no philosopher, and said but little. One thing I distinctly heard her say, in expression of her dissent from such views. She said: "There must be something; for Nature cannot do it all;" and evidently that conclusion was ticketed by her as the final settlement of the question.

I beg to ask Christian divines, who taught that young lady that Nature does so much? I said nothing: the time and place were not suitable. And I am convinced that if nineteen of any twenty ministers of religion were to hear the remark at any time and place, hardly one would feel called upon to notice either excess or defect in the speaker's confession of faith. So long as our own professional depart-

ment, the supernatural, is held in proper dignity and honour, it matters little to us divines, conformist or not, how people think of common nature with a small *n*, or how they arrange the departments of the two unconscious agents Necessity and Nature with a capital *N*. Which is the more nonsensical, the Super-natural or the Super-divine?

We know that many teachers and writers mean, in speaking of the bounty, the wisdom, the provisions, the selections, the skilful adaptations, or the nursing and motherly care of Nature, to use the word as a reverent screen for the Divine presence and action in causation; and some of these writers take pains to make the reader see what they mean. But if that had been the trained and habitual thought of the young lady, she would not have been content to sum it up thus—"there must be something, for Nature cannot do it all."

I am aware of the wide freedom unhappily permitted even in reasoned philosophy to tropes and personifications; and I must content myself with expressing my regret, that there are too many charming books, which are written, as I would fain believe, by Christian writers to make science attractive to the young and unlearned, and are full of beautiful sayings about this personified unconscious Nature; yet books, in which it is evidently considered bad taste and somehow infringing the dignity or supposed taboo of science, to allude to an intelligent and purposing Cause; so that from beginning to end of them there is no hint given that the meaning of the writers in these fine sayings is different from that of authors, who are in like flowery terms eloquent about nature, who are known and desire to be known as equally far away with Mr. Herbert Spencer from belief in a conscious Creator and Upholder of the universe, and who would scorn to confess that there is either in this worker Nature or in any Author of Nature the least power of Knowledge or Will, much less deep science like their own.

With these authors, this term Nature, whose work they so much admire and understand, is but one of many synonyms for one grand old heathenish name—the great goddess Must-be, which fell down from Jupiter.

I return, as I promised, to the foundations of a *priori* and transcendental philosophy. My affirmation is that there are no such foundations, and that, therefore, this philosophy is all a mess of dark clouds and chopped moonshine. Many of us have thought this. I think I can prove it. My proof is in two propositions, which I read again from the first page of this paper.

First, this *a priori* has no other definition in Kant beside that at page 3 of the Introduction to his *Critik*: “Whenever a proposition is conceived *by me*, together with its necessity, it is a judgment *a priori*.”

This is the foundation. Everything rests upon it. Passing over in this the fatal sophism *non datum pro dato*, all those, who are satisfied with my demonstration that the word *necessity* is unmeaning and valueless in philosophy, will agree that the term *a priori* has no definition whatever but what vanishes with the null term *necessity*; and that this *a priori*, therefore, is also a pure nullity in thought.

Secondly, in the first article of the *Transcendental Æsthetic*, page 25, and at p. 58 in the second article of the *Transcendental Logic*, Kant makes this *a priori* completely form the definition of the transcendental. This can be verified by inspection of those articles. It follows that the transcendental also vanishes into nullity with its vanishing definition by this zero, *a priori*.

This argument is a short one, to sweep away whole libraries of the most difficult books in the world. Being short, it can be the more readily assailed and proved unsound.

I hope and I wish to hear it so assailed and demolished,

not by names and authorities, but by logic better than my own. I am far from saying that it cannot be refuted. But until it is refuted, I am not ashamed to say that it appears to me to be demonstration. Many unrealities of so-called philosophy have disappeared. Would that we were rid of them all.

To what I have laid before you in this paper, and in the one read here a month ago, I look for no reply from the front of the fashion. As I expected, I have heard of no answer from that quarter to some chapters of unfashionable logic on the first steps of thought, which I had the honour to present to you over a dozen years ago, and which were afterwards expanded into a volume now out of print. There is no occasion for hurry.

But, surely, after these two fresh acts of presumption and defiance of the fashion, it should be worth the while of some one who has not yet made his way to the shining front, to show, with the help of the leading lights, that this old man has been writing and talking nonsense.

For that I am content to wait on, if it be God's will, in my silent corner and to grow fat, for a dozen years more.



## NOTES ON THE COOKE COLLECTION OF BRITISH LEPIDOPTERA.

By JOHN W. ELLIS, L.R.C.P., F.E.S.

ASSOCIATED as he was during the greater part of his life with Liverpool, to which city he bequeathed his collections of Lepidoptera, it is but fitting that the records of this society should contain a notice, brief and fragmentary though it must be, of the life and work of Nicholas Cooke.

The sons of a highly respected Liverpool merchant, Nicholas and his brother Benjamin seem to have become imbued with a love of natural history during the days spent at the Friends' School, Ackworth, near York. Little is known of the early life of either, but in 1833 we find Nicholas, when not out of his "teens," and while on a visit to his uncle Robson, at New Brighton, making the discovery which more than any other has been associated with his name, that of *Nyssia zonaria*, the belted-beauty moth, a species up to that time unknown as an inhabitant of Britain. During the greater part of the fifty years which intervened between this time and his death, Nicholas Cooke was an active member of that band of naturalists who have been the pioneers of entomology in the north of England; men whose names have been household words to students of entomology; men such as Jethro Tinker, Carter, Edleston, Ashworth, Hague, Crozier, Greening, Gregson, and Sidebotham, who, together with the brothers Cooke, were distinguished by their zeal and untiring industry in the pursuit of entomology at a time when to be a collector of insects was almost synonymous with being a fool or madman; men who

thought nothing of walking Sunday after Sunday from Liverpool, Manchester, and Staleybridge to Warrington (selected from its central position) to exhibit their recent captures and discoveries, and walking back again at night. These were the "Lancashire collectors," who, notwithstanding their eminent success in the discovery of new species of insects at a time when this was considered as the *ultima thule* of natural history, and in throwing new light upon many obscure phases of insect life, were sneered at and treated with every discourtesy by their Metropolitan rivals, and that not only socially, but even in the pages of such periodicals as *The Zoologist*.

Among the species of Lepidoptera discovered newly in Britain by Nicholas Cooke may be mentioned, in addition to *Nyssia zonaria* already alluded to, *Schranckia turfosalis*, *Peronea potentillana*, *Peronea permutana*, *Pterophorus teucris*, and *Rhodaria sanguinalis*, the latter taken for the first time flying on the New Brighton sandhills, at five o'clock on a June morning. "Who," as Mr. Gregson remarks, "ever thinks of going collecting at this early hour now-a-days?" But Nicholas Cooke was not so much a discoverer of new species as a seeker, and a successful one, of insects hitherto considered very rare. Thus he re-discovered *Sesia scoliiformis* and *Agrotis Ashworthii* at Llangollen; he found a clue to the capture of *Peridia trepida* in Delamere forest, and he soon made this a common insect in the collections. Though his brother was the discoverer of *Chiemiatoxia boreata* in Petty Pool Wood, Nicholas it was who, by his unflagging energy, supplied most of the English cabinets with the species within a month of its discovery. Even during the latter years of his life he spent a holiday each year in the heart of the Scotch Highlands, collecting such rare insects as *Pachnobia alpina*, *Noctua sobrina*, *Anarta melanopa*, *Anarta cordigera*, *Psodos trepidaria*, and other less preten-

tious species, not for his own collection so much as for others who, though perhaps equally zealous as entomologists, had not the opportunities he possessed of spending a month or six weeks in Scotland.

Though never a voluminous writer, Mr. Cooke occasionally contributed articles to the entomological periodicals. He read several interesting and always thoroughly practical papers before the Lancashire and Cheshire Entomological Society, of which he was for some years vice-president, and which society, indeed, was founded at his house at Liscard. His decease was of a singularly painful nature, and the news of it came upon us with great suddenness, for he had always appeared in the most robust health. He had gone to London to a meeting of kindred spirits, at the house of an entomological friend, for the express purpose of exhibiting some of the captures made during his last visit to Scotland, and it was during this interesting meeting that he suddenly expired. He was interred in the cemetery at Liscard, in the beautifully impressive manner adopted by the Society of Friends, of which body he was a member, and his collections of European and British Lepidoptera bequeathed to the city of Liverpool stands a lasting memento of the untiring energy and unselfish labour of the last but one of the old "Lancashire collectors."

Though the collection of European Lepidoptera, containing as it does types of many species of butterflies and moths which do not occur in Britain, is of greatest value to us as students, yet it is the British collection that I would call your attention to to-night.

This large collection of insects has not been altogether the work of Nicholas Cooke himself, for on the death of his old friend and fellow-worker Noah Greening, of Warrington, in 1884, he purchased his cabinet of British Lepidoptera, giving for it the sum of £500; and this, added to his own

good collection, together with a further addition of a selection from the collection of the late Edwin Birchall, of Douglas, for which he gave £150, constitutes the collection as it now stands, contained in about ninety drawers, and which cannot number less than twenty thousand individuals.

In addition to a very large number of the British butterflies and moths which are usually found in collections, this contains an exceptional number of species which are either totally extinct in Britain or are of very rare occurrence. Such an example, for instance, is seen in the large copper butterfly (*Polyommatus dispar*), once a common inhabitant of the fen district of the Eastern counties, but quite extinct for years, and of which the Cooke cabinet contains a row of fifteen specimens. *Lycæna acis*, too, another extinct British butterfly, is represented by eleven specimens, and *Lycæna arion*, the "large blue," nearly, if not quite, extinct, is completely represented. The collection, too, contains full series of twenty to twenty-five individuals of such species as *Clostera curtula* and *C. anachoreta*, of both of which there are grave doubts as to whether the specimens sold and exchanged as British for the last ten or fifteen years have not been imported from the Continent.

Among butterflies and moths of very rare occurrence in Britain, the cabinet contains five specimens of *Pieris daplidice*—the Bath white butterfly; three *Deilephila euphorbia*, the spurge hawk-moth; a whole series, twelve in number, of *Deilephila galii*, a species which has scarcely occurred in England since 1870, when it was abundant at Wallasey; two *Deilephila livornica*, one *Chærocampa celerio*, three *Cerastis erythrocephala*, three *Micra ostrina*; a single specimen of the scarce geometer *Sterrha sacraria*, and single specimens of the still rarer *Eupithecia innotata* and *Sesia vespiformis*; while a specimen labelled *Eupithecia egenata*, if it be that species, of which there is some doubt, is unique. Among

the "clearwing" moths, of which Mr. Cooke was very proud, is a row of twenty-five to thirty specimens of *Sesia scoliformis*, already mentioned as having been re-discovered by him, after being lost for years, and which has not been taken for a very long period. Among insects of somewhat commoner occurrence, but which are still rare, are four *Vanessa Antiopa* (the Camberwell beauty), seven *Argynnis Lathonia* (the Queen of Spain Fritillary), a full series of fine specimens of *Agrotis Ashworthii*, five *Dianthæcia Barrettii*, six *Dianthæcia irregularis*, nineteen *Polia microcincta*, eleven *Plusia bractea*, fourteen *Plusia orichalcea*, three *Heliothis armigera*, ten *Heliothis peltigera*, and a row of thirty-five specimens of the now lost *Acidalia contiguaria*.

Modern entomologists judge of the value of a collection of Lepidoptera by the number of "varieties" it contains, including under this name not only variations due to varying geographical (or, perhaps, more strictly, geological) conditions, but also accidental variations not perpetuated in the species, and which might be better termed monstrosities. Judged by such a standard, the Cooke collection is found wanting. There are not many geographical forms, better called races, and what there are are not distinguished by any label bearing the name, of the locality from which they have been obtained; and the monstrosities or aberrations are of very limited number. Two or three of these latter certainly deserve notice. Perhaps the most remarkable is a specimen of *Acronycta tridens*, in which the basal third and the portion beyond the subterminal line of each forewing is of a sooty black, with the usual basal streak and dagger-like mark of the hue of jet. Another specimen of interest is a *Hibernia leucophearia*, in which the usual shades on the forewing are sharply outlined in black; while in a specimen of *Anisopteryx æscularia* all the markings are obliterated except a slightly angulated black line near the middle of the

costa, and a short streak on the inner margin of each fore-wing. The series of *Amphydasis betularia* (the pepper moth) contains some nice forms intermediate between the old light-coloured black-sprinkled type and the form which now most commonly occurs, and which is quite black.

That most protean species *Abraxas grossulariata* (the currant or magpie moth) is represented mainly by forms of common occurrence, while the series of *Arctia caja* (the tiger moth) contains not a single aberration. I may remark that the collection contains a few of the highly interesting races which within the last few years have been found to inhabit the Orkney and Shetland Islands.

The collection was being re-arranged by Mr. Cooke, and up to the time of his death about one-half of the specimens were stored away in spare drawers, but since its reception at the Liverpool Free Public Museum the arrangement has been completed, and the collection can now be referred to by anyone interested in the Lepidoptera, on application to the courteous curator, Mr. T. J. Moore.

## ON THE REMAINS OF TEMPERATE AND SUB-TROPICAL PLANTS FOUND IN ARCTIC ROCKS.

By REV. H. H. HIGGINS, M.A.

THE specimens before you were recently contributed to the Liverpool Museum through the kindness of Professor Flower, of the British Museum of Natural History. They were selected by our friend, Dr. Henry Woodward.

The fossils, as you see them, are not particularly striking objects, but they are singularly and widely significant—a fact which we shall more readily appreciate if we suppose ourselves to be accompanying a traveller proceeding northward through the glens and forests of England and Scotland.

The change in the vegetation would first be conspicuous in the diminished variety of arboreal forms. Spanish and horse chestnuts soon disappear. Noble elms, oaks, beeches, and ash trees lose their grand proportions, and at length are seen no more. Coniferous trees, the larch and the pine, reach higher latitudes, but the willow and the silver birch persevere further still; all that they have of tree-like beauty they give for their life. Shrubs, and even herbs, fail before the rigour of the Arctic climate till, long before the palæocrystic ice is reached, the rocks support only a lichen, consecrated to the memory of the brave explorers it has saved from a cruel death by starvation.

It must indeed have been a surprise to Captain Inglefield, remembering that he was wholly to the north of desolate Iceland, when at Disco he found serviceable beds of coal, with fossil remains of broad leaves, such as those of

the oak and magnolia, in perfect preservation, and the stock of a tree four feet in height, and of greater circumference than an ordinary man's body, standing on the spot where it had grown.

In accordance with many reliable indications, the fossil flora of North Greenland is assigned to the Lower Miocene epoch. Professor Oswald Heer's great work on these plant remains is before you, and his researches have been extended by Robert H. Scott, of Dublin, whose valuable paper on the subject will be found in the *Journal of the Royal Dublin Society*, vol. v.

The fossilised forests of Greenland, lat. 70° N., yield not only poplars, birches, and firs, which occur in Lapland, within the limits of the Arctic zone, but many other trees requiring 10°–20° of warmer latitude—two sequoias, three beeches, and four oaks, one of them evergreen, with fine leaves six inches long; a plane tree, a magnolia, a cherry, and a walnut. Ivy clothed these trees, while the hazel, two Christ's thorns, a buckthorn, and an andromeda, formed the underwood.

The Osmunda, a buck-bean, a water lily, and a wood cypress prove the existence of pools and marshy ground, whence may have been derived the brown coal deposits found in North Greenland.

Other portions of the Arctic zone have afforded similar Miocene remains. Professor Nordenskiöld brings from Spitzbergen, lat. 78°, fossils of a beech, a plane tree, a hazel, and a wood cypress; and from lat. 79°, a poplar. Hills of fossilised wood were observed by Captain M'Clure and Dr. Armstrong, in Banks Land, lat. 74°, and there is little doubt that in Miocene times the North Pole itself, if dry land existed there, was clothed with verdant forests comparable with our own. On the Mackenzie River, near the Arctic Ocean, remains of similar trees and shrubs have been found,

together with beds of coal and pyrites. On exposure by denudation the coal crumbles and takes fire.

This natural ignition seems to have occurred at various successive times, as fresh surfaces of the rock became exposed. It has had the effect of baking the strata of clay, in which broad maple-like leaves are beautifully preserved, into a fine biscuit porcelain of a buff colour. The clay is, on emergency, eaten by the natives.

Many more examples of temperate or sub-tropical plants found as fossils in Arctic rocks might be cited. We turn now to the question—What has brought about so great a change?

Professor Heer considers that the mean temperature of the Arctic zone in the Miocene epoch, when these plants are supposed to have flourished, must have been about 30° F. warmer than it is at present. Such a difference in degrees of temperature would raise our climate to be insufferably torrid, or lower it to Arctic severity.

Professor Sir W. Thomson has shewn that the present influence of the internal heat of the globe has an effect on climate amounting only to 1-75th of a degree, and that the refrigeration cannot be due to the general cooling of the earth's surface.

In investigations relating to the astronomical causes of changes of climate, it is very difficult to make simple statements that shall be absolutely accurate. Professor James Croll, in his philosophical volume on Climate and Time, enters very fully into the consideration of influences which counterbalance or assist each other. The greatest of these is the periodic change in the eccentricity of the earth's orbit, which becomes more or less oval or elliptical, and returns to its more circular form. These changes occur at long intervals, and the *maxima* and *minima* vary, as more or fewer of the lesser influences oppose or augment the greater; just

as a maximum spring tide may be exaggerated or depressed by a strong wind.

The earth's orbit is never circular, but at its very greatest ellipticity, a diagram of it, made to scale, would appear to differ very little from a true circle. Nevertheless the earth would then be several millions of miles nearer the sun at one end of its orbit than at the other—a difference which might well affect the climate greatly, and even fatally, but for other counteracting influences.

Still, in any of the years or centuries during which the earth's orbit was in its most elliptic condition, there would probably be a great ice age at one pole, and a correspondingly mild temperature at the other.

Sir Charles Lyell (*Principles*, vol. 1, eleventh edition) considers that the cold of the glacial epoch was brought about by an increase of eccentricity. It seems to me that any cause producing refrigeration in the Antarctic zone would, at the same time, exert a calorific influence upon the climate of the Arctic zone.

M. Leverrier, the co-discoverer, with Adams, of the planet Neptune, has given formulæ by which the times of *maxima* and *minima* of eccentricity may be computed, like eclipses, in advance or in the past; and Professor Croll, according to this formula, has computed the epochs of greatest and least eccentricity for three millions of years in the past, and one million in the future.

One thing, at all events, is plain—that in dealing with the problems suggested by these few leafy bits of shale and baked biscuit we are dealing with time extensions of which we can form no conception. It is true and worthy philosophy to compare the words we use with the impressions produced by them on ourselves and others. An illustration of this is given by James Croll, with reference to the term “a million.” Mr. Croll says—“Let an enquirer be at some

pains to realise 'a hundred years.' If he be 70 or 80 years of age, he can look back upon a considerable portion of such a period. If he be 50, he must multiply all that he can recollect of his life by 2, or if 25, by 4, and he will have a sort of sense of a long period, more than sufficient to include the seven ages of man."

The writer here referred to a narrow slip of paper on the walls, extending more than half-way round the lecture-room; this belt standing for one *million*, the black bar representing one *hundred* was so narrow as to be invisible from the more distant parts of the room.

To conclude. Next to the pleasant surprise awaiting the explorer on finding, in the regions of perpetual ice and snow, the remains of more than sixty flowering plants, must have been his recognition amongst them of several familiar friends; for example, the water-lily of the summer pool, and the magnolia, queen of the terraced walk.

Of the sixty species, however, not more than four or five had conspicuous flowers. Almost all were of cone-bearing or catkin-bearing families, such as the pine or the birch. This implied that they were wind-fertilised, as the hazel or the yew-tree; and their preponderance in the flora might be owing to a comparative scarcity of fertilising insects, though large insects flourished long before the Miocene, in the Oolitic, and even in the Carboniferous rocks.

It is impossible to regard these ancient appliances for fertilisation, combined with flowers of such exquisite beauty as the water-lily, the magnolia, the iris, and the buckbean, causing the wilderness to blossom long before the time when there is any evidence that man existed, without acknowledging that a Divine Order long preceded the genesis of the human race, and that CARE was manifested "for every plant of the field before it was in the earth, and every herb of the field before it grew."



# THE MERCHANT OF VENICE.

By EDWARD R. RUSSELL.

I.—SHYLOCK. (1884.)

UNDER no circumstances do I ever attempt criticism of Shakspeare without asking myself whether a man of so little leisure is entitled to undertake a task requiring so much research and ample well-used opportunity for reflection? Still I do not deny myself the pleasure. Forced to forego anything like a scholarly study of the dramatist, one may feel somewhat compensated by the enjoyment of fastening directly on what one takes to be his meaning, and the true import of his characters; and if a sense of success and conviction attends this process, one may even dare occasionally to plume oneself on having hit, owing to the very directness of one's swift study, on some felicity of judgment or some new discovery of unsuspected beauty. Much oftener in my own case new light has been borrowed from a great piece of acting, and I have seldom taken pen in hand on a Shakspearian subject without having to attribute to what I have seen on the stage critical promptings, fruitful suggestions, or corrections of previous opinions.

Several of the most frequently acted plays of Shakspeare have had a changeful history, and the most curious thing in the history of "The Merchant of Venice" is, that it has been found fully commensurate in its latent and effective signification with all the expansion of ideas and amelioration of sentiments which have occurred as the world has grown more enlightened and less brutally inclined to intolerance.

To what are we to attribute this seeming elasticity of a great work of art? Some would say, to the fact that Shakspeare was before his age, and took a view of the Jew in his relations with Christians which Christendom in general was not capable of taking for many years after, and, indeed, is only slowly arriving at now. I would not utterly reject this theory; but a far more tenable one is that Shakspeare's happy success in anticipating the tolerance of later ages was chiefly due to his fidelity to human nature. A dramatist may write "with a purpose," as they say of novels, but Shakspeare's main purpose was to reflect humanity. If the Shylock of Shakspeare and the spirit of "The Merchant of Venice" are capable of very different interpretation from that which they received in earlier centuries, and down to quite recent times, it is because Shylock and the other characters, and most of the relations between them, were truly drawn—drawn from the life—or, at any rate, drawn to the life. It is just as if we could go back into the old Venetian world and see the Jew living and trading amidst the scorn of his Christian fellow citizens, with contumely constantly hurled and heaped upon him. "Even in this case," as Dr. Elze has written, "Shakspeare has not departed from his 'desperate objectivity.' Even here he has held up the most faithful mirror to nature, without giving us any signs of his personal opinion except at most between the lines." Because Shakspeare departs not a hair'sbreadth from reality, Shylock and his persecutors are, and must always be, true and comprehensible; though the people of one age will comprehend them very differently from the people of another. The difference is in the comprehenders and not in the comprehended. So it would be with any historical character or period if biography and history were as exact and vivid as Shakspeare's drama. The seeming expansiveness of Shakspeare's work in such a case as this arises from the

fact that human nature is always the same, rather than from a poet of the sixteenth century having had a prophetic vision and foretaste of the idiosyncrasy of the nineteenth century.

Yet when once we realise the extent to which the play is capable of being interpreted as a great plea for toleration, it is almost impossible to go back to the old idea of it even to the extent of fully believing that idea to have been entertained.

The following memorandum, written a few years ago, condensed into a page of a magazine the story of the interpretation of "The Merchant of Venice," as I understood it, down to the point to which it had been brought by the newest histrionic commentator." \*

Whatever doubt there may be as to the earliest forms of the story of the Merchant and the Jew, there can be none as to their main spirit and intention. The play of "The Jew," on which Shakspeare is thought to have founded "The Merchant of Venice," is said by Gosson to have represented the bloody minds of usurers. And the ballad of "The Jew of Venice," concludes with three stanzas, in which it is alleged that "Many a wretch as ill as hee doth live now at this day, that seeketh nothing but the spoyle of many a wealthy man, and for to trap the innocent, deviseth what they can." To us, informed by the gradual and, of late, triumphant development of Shakspeare's larger and more human conception, it seems almost incredible that Shylock should have been regarded for a long period as a mere type of cruel and tricky greed, enlivened for purposes of comedy with a few peculiarities and locutions of the nation with which usury is popularly identified. So it was, however. Even Edmund Kean, though his genius in enacting poignant emotion gave great force to the sympathetic and domestic side of the character, probably retained strong traces of the traditions according to which Shylock was a sort of stage antic, not much unlike any old-clothes-man who might be the familiar object of street-boys' jests and jibes. In our own day Robson, in whom true

\* *The Theatre*, January, 1880.

tragic fire frequently sputtered and sometimes blazed, and who reminded Crabb Robinson very vividly of Edmund Kean, made it clear to us how it was possible to play the part somewhat in this spirit, even in burlesque, without sacrificing its tragic strength. But no such combination of comic usury and domestic passion, however skilful, however human, rises to the height of, or even meagrely expresses, Shakspeare's idea. As Shakspeare went below the surface of realistic comedy to inspire his Jew with fervent *pride* of race and meditative *individuality* of race, so Irving has gone below the moral stateliness of the modern and better Shylocks to impart to his impersonation, at its very heart, the ruling feelings of a Jew such as Shakspeare has drawn. These feelings are betrayed in his face, in his port, in his postures, and in his gait; all of which, when they are not under the dominating control of policy and enforced deference, reveal a lofty consciousness such as was once manifested to an English constituency by a candidate "descended from a line of Jewish merchants who had dwelt in the Home of the Ocean during the days when Venice remained, at least in name, the pride of the Adriatic," when he told the electors that his ancestors had been princes and statesmen when theirs were staining their bodies with woad. As in the writing, so in the acting of the play, the first and highest merit is the presentation of its tragical element, which in the scene with Tubal, and in the trial scene, is so grand, so moving, so impressive. But, after this, as in the play so in the acting, the greatest intellectual triumph lies in the ample grasp and powerful expression of Shylock's profound and consuming Hebraism. Shakspeare's composition abounds in the loftiest and the lowliest treatment of the subject. Irving's rendering has caught the motive and vivified the details of the theme, from the merest suggestion of a Jewish phrase to the most mystical soarings of Hebrew contemplation.

Some will think that I am bringing very precipitately forward my favourite modern actor, but I will immediately show from other testimonies as to another great actor how remarkable was the contrast between the tradition which Irving displaced and that which most of us now regard as established. Mr. Edwin Booth played Shylock while the recollection of Mr. Irving's performance was yet fresh, and it is no exaggeration to say that he played it very finely on the

lines which had long been commonly regarded as correct and consistent with the poet's meaning. Now, although Mr. Irving had been but moderately praised for his conception, Mr. Booth was assailed with a chorus of condemnation, not a note of which would have been heard if the performance had been given two years before. It was, they said,\* "the old and obvious representation of the Hebrew as a detestable but powerless usurer—a degraded being, a prey to sordid love of gain, to fierce love of revenge, redeemed by nothing nobler than a self assertion which proves futile. The words that are most pathetic in the play were so pronounced as to bring out only their grotesque side, and to raise a laugh." "It is too low a view," said an eminent critic,† with sudden conviction, "to make the leading character in the great drama merely villainous and inhuman. The provocation ought to be dwelt on; the innate dignity of the character, even if it be only such dignity in evil as the hero of Milton's Epic has, should be made emphatic. The absence of all admirable and worthy qualities, of all claim to charity and respect, made Mr. Booth's Shylock a comparatively uninteresting impersonation, though his wonted skill in clear and picturesque elocution had their effect." You see how the conception had grown, and all in the direction and with the branchings indicated in the record of the effect of a certain performance which was just now read to you.

Another critic‡ wrote: "It is not improbable, that the savage and grotesque version of the part, is more like that which was originally handed down from Shakspeare's time, than is the rendering which lends Shylock the fine dignity of an outraged member of an oppressed race." And another writer said: "It is necessary to note, that Mr. Booth is probably quite satisfied that in his hands Shylock shall gain but little compassion for his wrongs. Though he does

\* *Times*.† *Observer*.‡ *Saturday Review*.

not make of the usurer the grotesque and offensive creature that we are told he used to be, he endowed him with little of the dignity which has of late been thought appropriate to the old Jew," and incidentally it was noted, that the revolution of sentiment or judgment in this matter, created no doubt by the impersonation on which my memorandum was written, had been somewhat prosaically initiated by Mr. Coghlan, who had represented Shylock as a gentlemanly and refined moneylender.

Thus do we gradually fall out from the beaten track—sometimes with mincing steps and in dress shoes, in the company of Mr. Coghlan; sometimes erratically in the strange strides of Mr. Irving: but always advancing and never retiring; always seeing more of natural truth and more of Shakspeare, with the same eyes at the same moment; always with a deeper enjoyment of the free prospect which we behold, and the fresh air by which we are environed.

There are some who think that this may be true of many dramatists, as it is true of Shakspeare. One case to the contrary cannot prove much; but if any one desires to know how strong a case to the contrary may be—even though it is the case of a genius—let him turn to Marlow, Shakspeare's greatest rival; let him study the "Jew of Malta," and ask himself whether it would be possible under any circumstances, for that farrago of unnatural tragedy to grow into better favour and nobler proportions, as Shakspeare's greatest plays do when the understanding of mankind itself expands.

Of course, no one would say that the nobler and more subtle reading of the "Merchant of Venice" suddenly sprang into being without an interval of evolution between the old red-wig, comic-part stage and it. We ourselves can remember actors, and especially Phelps and Creswick, by

whom Shylock was invested with considerable dignity, though they did not rise to such a height of congenial imagination as to shed over the whole play the grander and more interesting significance which now seems to us its essential meaning. Their worthy successes were attributable partly to their instinctive reverence for all that is noble in Shakspeare's eloquence, and partly to a natural and cultivated force of elocutionary expression, in which no noble eloquence of a dramatic kind could greatly suffer, and partly to the character having been tardily, but before they came to it, recognised as chiefly tragic.

Reading the language of the play, we feel in it exactly what we feel in our observation of Jewish fellow citizens in real life, that there is a curious dual impression being produced on the mind by much that they say and do and that appertains to them. Most of the finest passages would be capable of being given, and even plausibly given, with the intonation and manner of Moses in the "School for Scandal." Our forefathers were not utter fools, but only amenable to prevailing ideas above which nobody had risen, when they were satisfied to have Shylock played as a sort of old-clothesman. Schlegel speaks of "the light whisper of the Jewish accent, even in the written words, such as is still found in the higher classes of Hebrews, notwithstanding their social refinement." It is much more than a light whisper, and is capable of being heavily pronounced. But the Jewish element of Shylock does not end here. By the grave tones of another, and yet a Hebrew elocution—by an elocution which realises the majestic side of the Semitic thought and temperament, the character is newly ennobled. The humble, spiteful Jewish merchant—the champion of usury—makes kindred with the Hebrew prophets; and here, as elsewhere, that oddly mingled type, Jacob, becomes the meeting-point

of the highest and the lowest forms of the racial character. The Israel who cried, "Me ye have bereaved"—the venerable patriarch who said to Pharaoh, "The days of the years of my pilgrimage are an hundred and thirty years. Few and evil have the days of the years of my life been, and have not attained unto the days of the years of the life of my fathers in the days of their pilgrimage"—this was the Jacob who put the skins of the kids of the goats upon his hands, and upon the smooth of his neck—the "skilful shepherd," who "peeled me certain wands," in Laban's farm, where the "parti-coloured lambs" "were Jacob's," and this was his "way to thrive, and he was blest; and thrift," adds commentator Shylock, "is blessing, if men steal it not."

A strange conjunction! But true to life, both in its height and in its abasement, and a fascinating source of high inspiration to others than Shakspeare where there has been the Shakspearian mind. Do we not remember George Eliot's Mordecai, and George Henry Lewes's little company of shabby student Jews behind a London thoroughfare? And have we not heard—those who care to pursue such inquiries—have we not heard that, if one desires to find the old Hebraic enthusiasm and loving home familiarity, with the old Hebraic lore, one must go, not to the wealthy Jews, who have put off all but the name of Judaism in becoming nationalised in the commerce and wealth of the lands of their adoption, but to the poor and squalid of the race; of whom Christians, as they pass them, casually think in the coarse and flippant vein of Gratiano and his chums?

Much interest attaches to the observations of Schlegel upon this play; first, because he was unlikely to be affected by any particular rendering of the principal character, and secondly, because he wrote at a time when the transition of opinion respecting it was beginning. In general terms he

pronounced the "Merchant of Venice" a wonder of art and ingenuity for the reflecting critic; and well he might do so, for, aside altogether from the subtler question which we have been considering, there are many questions of delicacy which might create a great deal of debate, and which one would be sorry to see dealt with by rough hands. For instance, the use made of the mediæval story of the pound of flesh; the somewhat artificial nature of the casket scene, too conventional as it seems for a work so fraught with human nature and reality; the law of the trial scene; and the exquisite charm of the last act—which may be considered the finest anti-climax in literature. But, passing by the refinements, Schlegel pounces with sure sagacity upon the Semitic element of the play as that in which its main strength lies. He does not, however, perceive its depth and sublimity. He tells us of the Jewish accent, and brings to mind as he speaks, the "Why, look you, how you storm," which seems to bewray the Jew, as the Galilean provincialism betrayed Peter; but he has not caught the echoes of the Hebrew's voice as, rapt in sacred traditions, he stands amid the sordid associations of his trade, glorified as an inspired rabbi by his preoccupation with the holy grandeurs of his race.

"He hates our sacred nation" is his tacit anathema on Antonio. When he sets out to defend usury by biblical example he is soon lost in reverie on a mere detail of the story:

When Jacob grazed his uncle Laban's sheep—  
 This Jacob from our holy Abraham was  
 (As his wise mother wrought in his behalf)  
 The third possessor—*ay! he was the third—*

When Bassanio takes seriously the possibility of the forfeiture of the bond, the Jew exclaims, with what we now

see to be clear sincerity, and with righteous unction, "Oh, Father Abraham, what these Christians are,"

Whose own hard dealing teaches them suspect  
The thoughts of others.

The passages having this deep Hebraic tone are few, but the opportunities for a great conception lie in them. In them is the key which makes consistent the lofty eloquence of the sordid money-scrivener. In them is caught the suggestion of the fine demeanour, the Oriental calm, the inscrutable facial majesty which, when once associated with the part, are felt to be inalienable from it.

Moreover, when this point of true appreciation is reached, all the harsh lines of the character begin to soften without any loss of force. Schlegel says that Shylock "has not discovered the region where human feelings dwell." He could not have said so if he had heard a true Shylock bemoaning that there is "no ill luck stirring but what lights upon his shoulders, no sighs but of his breathing, no tears but of his shedding;" and dwelling in remembrance on the ring which he had given Leah when he was a bachelor and would not have exchanged for a wilderness of monkeys. Shakspeare, it may almost be said, never discovered the region where human feelings did not dwell. As for Shylock, his feelings are human, and most human because profoundly racial, and the poet with an insight which, having regard to the length of time that elapsed before he was appreciated, may be considered to have keen prescience as well as insight, has actually laid bare these feelings in their growth.

To behold Shylock gradually becoming fiercer and fiercer under wrong—passing from the mood of steady uniform national resentment into one of egotistical rage and animosity

and overt war on his Christian oppressors—is, as it were, to watch the veins of a placid anatomy swell and swell almost to bursting under the influence of some potent maddening of the blood. If it be asked whether he was not the same relentless fanatic when he proposed the “merry bond” as when he sought to enforce it, the answer may not be easy, but it is forthcoming. Unhappily we have, in our own day and country, things which may help us to understand the whole case. The common feeling of the average English aristocrat, the average English sectarian, the average English clerk, and the average English cabman towards Mr. Bradlaugh, should suggest to us some charity towards the Gratianos and Salanios and Salarinos of mediæval Venice. We may recognise in the uniform surly, deeply-convinced hatred of England among the mass of Irishmen the normal condition of Shylock. In the uncompromising and coarse fanaticism of an irreconcilable Irish member of Parliament, prompting him to all manner of injustice,\* and in the absolutely reckless ferocity of a sincere dynamiter, we may perceive the mood of relentless, pitiless, savagery into which Shylock was brought by brooding “in the region where human feelings dwell,” only too much and too bitterly.

In his normal mood, ever pre-occupied with his race's wrongs, ever ready to enjoy, as a righteous satisfaction, the thought of reprisals, he dandles, as it were, the notion of having a Christian on the hip. Think for a moment, and you will see that he could not possibly at first have entertained a serious hope or thought of ever actually having the opulent Antonio at his mercy. But the mere idea fascinated him, as even the least passionate of us often roll impossibilities as sweet morsels on our tongues. The thought of actually obtaining a cruel hold upon Antonio's body first arises at the point where the floating race fanaticism, always

\* This was written, be it remembered, in 1884.

conspicuous on the surface of the old Hebrew's mind, becomes the sole tenant of his thoughts, the sole instinct of his will, merged into and permeating his whole being, under the disturbing influence of an avalanche of misfortune, and of misfortune which is, as it were, saturated with the venom of Christian contempt and Christian cruelty.

At first, when Shylock hears that Antonio may have had losses at sea, it is while he is raging at his daughter's elopement, and the idea suggested to him is only that of additional calamity to himself. "There, I have another bad match—a bankrupt, a prodigal, who scarce dare show his head on the Rialto." Observe, no immediate thought of the terrible forfeiture to which he might become entitled. But all at once, as by a flash of thought—"Let him look to his bond. He was wont to call me usurer. Let him look to his bond. He was wont to lend money for a Christian courtesy. Let him look to his bond." "His flesh will bait fish." "If it will feed nothing else it will feed my revenge." "If Christians wrong us shall we not revenge? The villainy Christians teach me I will execute, and it shall go hard with me but I will better the instruction."

There is much more feasibility in the Jew's gradual bitterness thus traced than in any curt formulas, such as Schlegel's, that this old fanatic of race and patriotism and emotional domestic concentration was without feelings, and that "his morality was founded on disbelief in goodness and magnanimity." Shylock had acute and agonising feelings. He held high the very thought of goodness and magnanimity; but the world for him was a place in which goodness and magnanimity were never shown to any of his race, and so the very conception of goodness and magnanimity was personally and racially a conception of torture, of cruelly denied good, of wilfully inflicted wrong, the essential injustice and absurdity of which he could at any

moment expose in eloquence of splendid dignity and exhaustive demonstration. His hate indeed was naturally directed chiefly, as Schlegel says, against those Christians who are actuated by truly Christian sentiments; but not because those sentiments were themselves repugnant to him. Put yourself in Shylock's place, and the amiability of the virtuous Antonio becomes mere race favouritism and exclusiveness, his suavity a supercilious indifference, his lending money without interest a slur upon the religion and the practice which to Shylock were the closely blended and compacted all-in-all of life and sentiment and enthusiasm. "The contrast which Antonio's melancholy and self-sacrificing magnanimity formed" to the conduct of "the usurer Shylock" was great, no doubt, but evidence is forthcoming that any moderation in Antonio's aversion for the Hebrews in Venice came of mild temperament rather than from nobler feeling than was prevalent around him. The contrast was scarcely "necessary to redeem the honour of human nature," as Schlegel alleges, for this can only be said where the conduct branded as evil is *unaccountably* base or inhuman. In this instance the cruelty was not "selfish" so much as fanatical; and it reached its tragic height by gradations of provocation and passion which are made well apparent by the dramatist's skill.

Allowing something for the strong effect of an improbable and sanguinary plot, the human nature of Shylock does not need to be especially explained, though, like all human nature, it stands in much need of redemption. His mood at its worst was one into which human nature, when poisoned, as it is apt to be, by overweening infatuation of race, especially if aggravated by a sense of oppression on the score of race, is ever apt to be brought. We owe to the poet the majesty with which the scene and the character are invested, and the breadth and kindliness of the moral which,

after centuries of only partial understanding, is beginning to be drawn from it.

This is not the place to discuss points of acting. It is fitting here that we should regard the actor only as a commentator. But among practical commentators, Henry Irving, the actor, will be allowed high rank, even by those who dispute his histrionic pre-eminence. His Shylock was instinct with the same magic of discovery as his Hamlet, which so many ran after without understanding, and as his Othello, which only a man here and there either comprehended or cared for. The teaching or the suggestion was the more clearly given because the nature of the character and the finished manner of the actor combined to clear out of the way all disturbing and distracting details. This can never be in parts like Hamlet and Othello, where all is fret and fume. In them, the teaching and the revelation must be caught as it flashes amidst the whirl and whirr of tragical conflict and the paroxysms of noble but hysterical passion. Shylock is an Oriental—a Jew of a period when much of the Eastern dignity of the race was in full preservation. Eastern dignity is not a thing of mere pomp. It consists of natural calmness and tranquil force—weighty speech without effort—attitudes in which there is neither apparent study nor accidental awkwardness. Even the distances at which people stand from each other have something to do with the impressions made upon those who survey a scene in which Eastern dignity is the leading element ; and with a happy artifice, not only permissible but most illustrative, Mr. Irving as Shylock so took up his position on the stage, in his first conversation with the merchant and his friend, that the native and sustained dignity of the Oriental temperament was as it were thrown up into relief. The aspect of the Jew increased this effect. While not attired differ-

ently from other *habitués* of the Rialto, there was a suggestion of a mind that tended to wander beyond Venetian confines, in Shylock's striking features and well-held head; while in his gait, alert though calm, there was an expression of the Israelite's preoccupation with thoughts which, high or low, were entirely his own.

All this was remarkable enough, because of its contrast with the ordinary stage pompousness by which tragedians are accustomed to indicate their persuasion that a Jew upon whom Shakspeare expended so much trouble must be no ordinary man. But it was still more remarkable because it contrasted with another feature of the case which Mr. Irving brought out with wonderful effect, and without any apparent effort. Few realise, what to Shakspeare was evidently so vivid, the actual, physical character of the degradations to which the Jews in Shylock's time were subjected. That the Hebrews were literally spat upon cannot be doubted by anyone who intelligently reads the language; and the grossness of such outrages has had its share in poisoning the Jew's mind. Shakspeare meant us to see, and Mr. Irving helped us to see, the birth and growth of the horrible idea which is developed in the climax of the play. The audience noted the quiet but marked recoil of Antonio at the Jew's touch, and the Jew's stricken bow of deprecation and deference. They observed the noble pleadings of common humanity into which Shylock is led by his contemplation—as by habit of mind quickened by passing circumstances—of the indignities to which his people are subjected. They perceived that this had imparted, right or wrong, to Mr. Irving's delivery of the speech, "Yes, to smell pork," &c., a vehemence not so appropriate, one would say, as a more light and sneering utterance. They quivered with the ill-used Hebrew, as he burst forth into his rhapsody of sarcasm at the application of Antonio and

Bassanio for a loan. There was so far no touch of possible tragedy; but there was abundant food for abiding anger. And thus a highly probable foundation was laid for the superstructure of the play.

Shylock's bane is opportunity. But in Mr. Irving's reading the opportunity is not foreshadowed so soon as in the common performance. He does not fall to fawning, but only into a pleasant business vein, when, after his explosion, Antonio proposes to do without him, and it is in this vein, without a change of manner, that Irving as Shylock suggests the "merry bond" which is to give him the right to a pound of the Christian merchant's flesh. Whether Mr. Irving is of opinion, as most Shylocks are, that even thus early the Jew deliberately contrives a bond with a view to getting Antonio into his power, I know not, but it is a happy point that, by his natural playing of the passage, a contrary theory is favoured. That Shylock, as it were, toys with the notion of his being one day able to claim the very flesh of a Christian he especially hates, may, as I have said before, be admitted; but it renders the character more probable to suppose that he did not seriously expect the chance to arise, and, even when it did occur, would probably not have availed himself of it, but for the extreme provocation given him in the most Christian abduction of his daughter.

Following upon this idea, we might have supposed that the incidents of the abduction would in this version be most impressively and affectingly represented. They were so. Upon Shylock's house, and the adjoining houses, built upon the stage with such picturesque effect as may be got by the homely treatment of the windings of an ancient city, the act drop fell after the elopement of Jessica. And then, by a most happy thought, it rose instantaneously, and Shylock

was seen briskly coming over the bridge, and trudging in silence up to the door of the dwelling which he was to find deserted. The pathos of this was most touching. It was the best possible preparation for the scene with Tubal, which again was the best possible introduction to the trial scene. Much, in every rendering of "The Merchant of Venice," must depend on this renowned scene with Tubal. The changes of feeling are of necessity sharp—varying over such different shades as rage, greed, national humiliation, and keen domestic sorrow—and they have to be harmonised with a very fine sense of personal identity. The effect of the pathetic words, properly given, is irresistible. So is the fierceness. So is the hate. But all are blended in the veritable and visible Shylock, who stands there dazed and rent and torn by various and opposing feelings, but always the same old Jew, who has lost his money and his daughter; whom the Christians have utterly trampled on, and whose distracted mind is but gradually picking up the idea of vengeful consolation so opportunely yielded by Antonio's losses and the merry bond. In the midst of all the contentious agony and anger, come in moving accents the exquisite words, "No ill-luck stirring but what lights o' my shoulders; no sighs, but o' my breathing; no tears, but o' my shedding," which I have already cited, and which of themselves, when rightly heard, do so much to get rid of the conventional idea by which the effect of the play was long impoverished.

When last I saw this scene—which is, as it were, the grand attack on the character, the Rialto scene having cut the first parallels, and the trial scene finally winning the siege—I was especially struck by and gladly noted several points by which the quasi-religious and Hebraic tone of Shylock's revenge was vividly heightened, while its stern, cold savagery

was fully maintained. Such, for instance, was the solemn slow striking of the breast at the words, "The curse never fell upon our nation till now," and then, again, after deep thought, at the words, "I never *felt* it till now." Such was the fine point made when, upon receiving the tidings of Antonio's misfortunes, Shylock utters the first "I thank God" in wild, frenzied rage, but after a scarcely perceptible check pronounces the second "I thank God" with uplifted hands in lofty accents of religious doom.

All the world remembers the majestic and almost unbroken calm of the splendid trial scene, where Shylock stands with neither bond nor scales, nor even knife, at first displayed, to claim the forfeit of his bond. The crescent-pointed knife he soon draws from his girdle and uses callously in his slight and quiet gesticulation. The other insignia of his vengeance are only produced as occasion requires, when from point to point the Jew grandly follows up the suit which the law allows and the court awards. There has been no more striking picture in our time than this, as the true Shylock stands thus single and solitary in the court, silently and almost motionlessly masterful, a lofty, weird creature, erect as the impersonation of right, remorselessly menacing as the curse which must light on the city if justice be not done.

All the world has seen this, but all the world has not seen why it is, and some critics have called it inconsistent with the other aspects of the Jew in the previous acts. Different, yes. Inconsistent, no. The secret of the change in Shylock from his demeanour in the previous acts is not far to seek. It is power—newly-gotten, firmly wielded, grandly held. But lately the Jew had nothing but wealth, which did not save him from horrible and defiling degradations, and which he was not even allowed to put out to such usury as he desired. Now, he is lord of the destiny of his

chief and most galling enemy—*can* take and *will* take his life—*can* and *will* spurn usury and even principal to glut his vengeance. His calmness as he surveys the court and audience as if they were so many pigmies is the perfection of conscious power. And the stunning reverse, the sickened drooping exit, only heighten the effect of the grand struggle in which, after all, the new has proved too clever for the old, the west for the east, the smart technical Christianity of Venice and of Padua for the fanaticism of the Ghetto, even at its loftiest point of tragic inspiration.

One turns wearily indeed from such an illumination of the whole purpose and meaning of the play to the pages of learned critics, who have the secret of combining the greatest depth of stolidity with the wildest flights of fancifulness ever found together. You open the able and ingenious, the bright and pleasant pages of Dr. Karl Elze. He will chaperone you through the dull maze of German criticism. He will tell you in clear cut phrase how Shylock is an inveterate egotist—how the essence of the story lies in the glamour which gold had for Shakspeare, and the necessity he felt under of poetically freeing himself personally from all the influences which operated on his mind in reference to wealth and property—how difficult it is to say whether the character is tragic or comic—how one critic considers Shylock a mere bloodthirsty caricature of the chosen people—how another remarks that Shakspeare's comic personages are apt to fare ill, and that Shylock is not worse served than Falstaff—how Shylock is so hard a man that Shakspeare did not know what he was about when he let the old Jew kiss his daughter—how in the Tubal scene he “reveals himself in all the nakedness of his degradation, without a spark of human feeling, without an idea of the moral laws and ties which establish and govern society”—

how his "exclusive love of precious stones has made him a stone"—how he only laments his ducats and his jewels—and how "no syllable escapes his lips to express how heavy a blow has fallen upon his paternal heart."

This is criticism! Yet even here, amidst this mass of rubbish and crudity, there is to be found a passing perception that "the Christians had made Shylock what he was." "Shakspeare," says Dr. Elze, "may not have meant anything of the kind, but the temptation to draw such an inference lies nearer in this play than elsewhere in Shakspeare." In other words, the erudite German hovers on the admission that the naturalist and romanticist Shakspeare, may have embodied in anticipation, and by implication, the teaching of the didactic Lessing.

Human nature truly depicted by genius in any age anticipates everything. There is no limit to the subsequent scope of such works. The degree in which they are comprehended—the rate of the world's progress in apprehending the full capacity of their significance—depends less upon what is in them than on the speed or slowness of mankind in advancing in intelligence and virtue; and this, again, depends largely on the aptitude and originality of those who interpret such works either by criticism or in any form of art.

## THE MERCHANT OF VENICE.

BY EDWARD R. RUSSELL.

## II.—THE MINOR CHARACTERS. (1888.)

IN the foregoing essay, I have endeavoured to set forth and justify the opinion that "The Merchant of Venice" was in effect, though not fully in intention, a plea for toleration; but that this aspect of the play had only asserted itself in the course and by means of successive improvements in the acting of the principal character. Curious evidence is abundantly available to show, first, that until Shylock was more humanly played, "The Merchant of Venice" was supposed to be aimed at the Jews in a spirit of condign reprobation; and, secondly, that when Shylock began to be played more humanly, the change was resented as a weakening dilution of the proper virulence of the drama.

I propose to give an interesting illustration under each of these heads. The first is the concluding passage of Mr. Douce's remarks on this play, in his *Illustrations of Shakspeare*, published in 1807. He says—

It is much to be lamented that this exquisitely beautiful drama can neither be read nor performed without exciting in every humane and liberal mind an abhorrence of its professed design to vilify an ancient and respectable but persecuted nation. It should be remembered, that contempt and intolerance must naturally excite hatred; that to provoke revenge is, in fact, to become responsible for the crimes it may occasion; that to those who would degrade and oppress us, it is but justice to oppose craft; and that nature has supplied even the brute creation with the means of resisting persecution. It will be readily conceded, that there happily exist in the present moment, but few remains of the illiberal prejudices complained of, the asperity of which

has been greatly mitigated by the laudable and successful exertions of a modern dramatic writer, to whom the Jewish people are under the highest obligations

I presume this reference is to Lessing, and his drama "Nathan the Wise." And thereby hangs a notable literary coincidence. It was to Francis Douce, who wrote these generous words, that Isaac Disraeli dedicated his *Curiosities of Literature*. I presume that Francis Douce was not a Jew. So Lessing was a Lutheran Christian; but he is known to have modelled the hero of his great toleration play on his friend Moses Mendelssohn. It is curious if these protests against intolerance, on the part of two Christian writers, were in any degree prompted or occasioned by their knowledge and appreciation of two Hebrew friends, so remarkable in the history of literary and philosophic culture.

I do not endorse Mr. Douce's complaint, however. "The Merchant of Venice" is not an attack on the Jews. It is quite as much an attack on the Christians. But it is neither. It is a picture from life. But to give that picture its true moral perspective and colouring, the principal character had to be played as it has only been played lately. One of the ablest of our Shakspearian essayists, Mr. Watkiss Lloyd, vigorously protested against even the faint beginnings of this improvement. He rushed into complainings against "the maudlin sentimentality" that was being "bestowed on the doings of the murderous Jew." He applauded Jessica for being ashamed to be her father's child; said that her elopement was a virtue; and as for her running away with her father's jewels, we were only to learn from it "how utterly unkindness, sordidness, and distrust can at last erase the faintest tracks of natural duty and affection, in hearts that by nature are disposed to be their hallowed home." We had "outlived" he said, "the century in which Shylock was

made a comic character, only to reach one in which he had been dressed out in cast-off sublimities of martyrdom and magnanimity." These observations were probably aimed at Macready. There can be no doubt that if the play had afterwards come to be worthily represented in Mr. Watkiss Lloyd's sense, it would have been as mere a lampoon on the Jews, as Mr. Douce, with all its beauty, considered it.

In the general scope of "The Merchant of Venice"—inferentially, as I aver, favourable to toleration—Shakspeare projected himself beyond his own times. There was nothing except his own genius and innate humanism to propel him. So far as we know, the England of Elizabeth's time and James's was curiously of one mind. A deeply interested investigator, gifted with prescience, might have discovered a germ or two of Puritanism; but on the whole there was little tolerance or intolerance (except towards the Catholics) because there was no nonconformity. There were Jews, and in these Shakspeare must have noticed the peculiarities which in Shylock he so vigorously delineated. He was not at the time suspected of sympathy with the Jews. He was rather supposed to have identified them with an almost incredible monster. But it is neither the business nor the practice of a truly great dramatist to be enslaved by intention. The only power to which Shakspeare's pen submitted was human nature; in essentials uniform, in details varied by circumstances and influences. He caught the Hebraic spirit. He also caught the spirit of persecution. It was not his function to moralise, except so far as his characters might naturally moralise. They do moralise—each from his point of view. Shylock in the midst of his savage vengeance anticipates the serenest triumphs of intellectual toleration. The noble thought of Portia, all unconscious of Christian inconsistency in conduct, indicates to the vengeful Jew the

principles of mutual mercy, beyond which the noblest minds of all the ages can never advance. The other characters, so far as they are callous, express the incipient or developed brutality of the comfortable average of educated mankind. So far as they are gentle they mitigate by manner and disposition, as amiable people always will, the harshness of intolerance ; without ever giving up, as the most amiable of average people will not, to this day, or to the end of time, the prejudices by which intolerance is practically and logically supported.

Unlike inferior dramatists, in charge of mighty themes, Shakspeare acquaints us and surrounds us with the whole atmosphere and society in which the action of "The Merchant of Venice" proceeds. We do not feel that we are brought arbitrarily into the company of a dozen persons who are not at all specimens, either in character or in what occupies them, of the population. The minor characters—with the exception of the immortal Portia—are neither better nor worse than other Italians of their station. They have the ideas prevalent in Venice. If Shakspeare had distinctly before him the object which his play has since served, he effected it with infinite art. He did not attribute to Venetians of the middle ages ideas of toleration which they could not entertain. He qualified the intolerance actually practised by an infusion of that personal good nature which has always ameliorated persecution. He condemned it by those maxims of forbearance which are essential teachings of Christianity. He suggested tolerance by natural outbursts of protests from the Jew—for it is the victim who earliest arrives at the true doctrine of charity, even if he is the first to lay it aside when he gets the upper hand. All this persuades us that the truest art is that which is most truly nature, and that didactic purpose, how-

ever grand and far-reaching in the moral region, is best effected in fiction with strict regard to the general and particular truth of the scenes and characters which are invented.

If Shakspeare, in his play, had set all Venice to rights on the subject of toleration by inspiring some Venetian of the ruling caste with sentiments even more modern than the dramatist himself, much later, could be expected to entertain, his sin against probability would have weakened his homily in inverse ratio to the strength of his intention. Drama should be only incidentally moralistic. It is most instructive, as well as best in point of art, when it is as far as possible a block or a mosaic, cut or taken, just as it is, out of human life. There must be literary garnish and dramatic reconstruction, but not so as to unduly invade reality.

A shallow observation is sometimes made that the trial scene, and that especially the *dénouement* of the trial, is particularly improbable. In no large sense is this true. The currency of the story in differing forms in early imaginative literature is strongly in favour of its likelihood, or, at all events, of its being founded in fact. But, beyond this, we have in this celebrated case all the elements which are most constantly present in causes which have to do with the liberty and security of the citizen. Idolators of contract—and there are many worse idols—may find the Bramwellian view of jurisprudence set forth to their heart's content in the 95th Declamation of the Frenchman, Silvayn, where "a Jew would for his debt, have a pound of the flesh of a Christian." Here, in a series of imaginary orations, published in Shakspeare's time, they will read, in the Jew's pleadings: "Impossible is it to break the credit of traffic amongst men without great detriment to the commonwealth; wherefore no man ought to bind himself into such covenants which he

cannot or will not accomplish." The Jew admits, indeed, that "it seemeth at the first sight a thing no less strange than cruel to bind a man to pay a pound of the flesh of his body for want of money : surely," says he, "in that it is a thing not usual, it appeareth to be somewhat the more admirable ; but there are divers others that are more cruel, which, because they are in use, seem nothing terrible at all : as to bind all the body into a most loathsome prison, or into an intolerable slavery, where, not only the whole body, but also all the senses and spirits are tormented." Diverging from these bland and genial dictates of common humanity the Jew buttresses his case with several ancient and modern instances ; but still he betrays a very proper indifference, after all, to historical and ethical argument. He returns to his point and concludes—tersely demands the pound of flesh thus :—"I will only say, that by his"—the debtor's—"obligation he oweth it me."

One knows not whether more to admire the plaintiff's blank resolve to have the forfeiture nominated in his bond, or the ingenious extraneous considerations by which he essays to prove that his bond is not so very inhuman. Every reader who has a soul for law and order must feel that the defendant Christian is pitifully weak when he responds, with a painful affectation of satire, that "it is no strange matter to hear those dispute of equity which are themselves most unjust ; and such as have no faith at all, desirous that others should preserve the same inviolable." A court of law is not to be coaxed out of its "veneration for contracts," by the suggestions of unfortunate defendants, that the exactions of the unjust and the unfaithful would be "more tolerable if such men would be contented with reasonable things, or at the least not altogether unreasonable." The Jew had argued from Roman precedents in favour of drastic treatment of debtors ; and the Christian, with that historical smartness,

which is often the only inalienable possession of the oppressed, asks why he did not go on to tell "how for that cruelty the Roman commonwealth was almost overthrown," and then the laws against debtors were mitigated. The judge was invited to consider all these circumstances, but if that Christian escaped, depend upon it, it was because of some such technicality as Portia's; and it has been by technicalities, often most frivolous, nine times out of ten in history, that moral right has been maintained as against legal obligation.

There is something very striking in the manner in which Antonio, a Christian, and an eminent merchant of Venice, is brought within the danger of a despised stranger, who lords it over him as if their rank and pretensions had been reversed. We see in this the law of retaliation in full operation; and the law of retaliation is seen to be naturally brought into play wherever unbridled prejudice sways human conduct. The best that can then happen is that the oppressed shall now and then get his turn of being uppermost. It goes hard but he will better the instruction of his oppressor. We may be sure that Antonio was as little offensive as any Jew-hater would be, but he was a Jew-hater, though a gentleman and a Christian. Shakspeare drew the type for us, as it will be known for all time, or, at least, until the moral underlying this immortal story has been much better learnt than as yet it has been. It is so easy to conclude our fellow creatures Hottentots. It solves so much. But what is the moral of "The Merchant of Venice"? Does it teach us that the oppressor and despiser is always wrong in his estimate of the oppressed and the despised? Do we learn from it that Hottentots are not Hottentots? Are we to infer that Antonio, as a gentleman and a serious Christian man, was gratuitously and wantonly sinning against light in regarding the Hebrews pretty much as his contemporaries

regarded them? By no means. Shakspeare shows us that an oppressed person is apt to be malignant, and that, for a despised person, malignity may be the only way of not being despicable. The Jews were, perhaps, very nearly what Antonio thought them. At all events, one of them adopted readily enough, upon acute provocation, an expedient of revenge which had been suggested to him in a sardonic moment by the bitterness of his heart. The teaching in which Shakspeare anticipated his age, and in which even our age needs to be anticipated, is, not that oppressed peoples or classes are better than they seem, but that they can never be improved by oppression.

Antonio is a man of whom it is impossible to believe any intentional ill. There is not a more perfect gentleman or a better Christian in all Shakspeare. He wins the sympathy of many readers by his modern tendency to self-introspection. When first we meet him, he is perplexed by his own sadness, which is the basis in him, as in others, of a fine and gentle character. It wearies him and his friends, makes a want-wit of him, and he scarcely knows himself. Others explain it to him by the worry of business and the largeness of his ventures. He knows better. There is no reason for his melancholy. It is melancholy of temperament. Melancholy without acerbity is engaging. Antonio is too good a philosopher to be sour. He holds the world but as the world; a stage where every man must play a part, and his a sad one. Soon we find that he is all kindness for those about him, and especially delicate in his kindness, a trait which is shown in many turns of his conversation; in his indulgence of the lighter personages; and in his deeper consideration for Bassanio, for whom he cherishes a rare attachment. To this he gives most generous expression, assuring Bassanio, for instance, that he does him more wrong in

doubting whether he will do his uttermost for him, than he would do in making waste of all he has.

There are passages in this part of Antonio which seem inconsistent with generous feeling. When a Jew reproaches him with seeking financial aid where he has previously hurled his contumely, the sad, proud merchant replies that he is likely to spurn the Jew again; and that if the Jew lends him money, he should lend it as to an enemy, of whom, if it were not repaid, he might with better face exact the penalty. Those who regard Shylock as the cruel man of the play, should ask themselves whether, to a despised Jew, buffeted, abused, and spat upon, these words of Antonio might not naturally enough have suggested the "merry bond" of the pound of flesh. But there is no imputation on Antonio's sincerity. He looked upon Jews as infidels, and he did not believe in usury. These two prejudices justified him in his conscience in treating Jews opprobriously. If we ask ourselves the question, we shall all admit that there are classes of persons whom we, even in these days, despise, and if we avoid extremes of insult, it is more in deference to fashion than because of any difference of feeling. There is not a club in England in which things are not said daily as savage and inhuman as any expressions of Antonio, and some of those who say them are as good men and as kind as Antonio himself. But, like Antonio, they are bounded by their prejudices. "This Hebrew will turn Christian; he is kind." Antonio's only idea is that, if the Jew shows good qualities, he is turning his back on his race and faith. I have heard British Antonios express themselves very similarly about others than Hebrews.

A kinder gentleman, however, than Antonio, treads not the earth, as Salarino says. There are few pictures better worth painting than his parting at the ship's side with Bassanio, when Bassanio goes to Belmont to win the fair

Portia. Salarino describes it. Bassanio said he would make speed to return, but Antonio begged him not to do so. And then, stopping short,

His eye being big with tears,  
Turning his face, he put his hand behind him,  
And, with affection wondrous sensible,  
He wrung Bassanio's hand, and so they parted.

"I think," says Salarino, "he only loves the world for him"—a perfect image of a perfect friendship.

Another fine touch of the same sort is found in the brief beautiful letter in which Antonio announces to Bassanio the forfeiture of the bond into which he entered for Bassanio's sake: "Sweet Bassanio, my ships have all miscarried, my creditors grow cruel, my estate is very low, my bond to the Jew is forfeit; and, since, in paying it, it is impossible I should live, all debts are cleared between you and I, if I might but see you at my death: notwithstanding, use your pleasure; if your love do not persuade you to come, let not my letter." There is no line of Antonio, except when dealing with the Jew, in which his character of kindness, devout friendship, simple dignity, and tremulous delicacy, does not live in tender notes and colours. But the tenderest are in this sweet letter.

A graver tone is struck in the noble speech at the trial, when Bassanio has vainly striven to avert, by thrust and parry of argument, the destruction which impends over his lion-hearted surety. Here dignity reigns all alone. It should be cited as an example, not less of a perfectly sustained character than of the power of language to sustain a character perfectly:—

I pray you, think you question with the Jew:  
You may as well go stand upon the beach,  
And bid the main flood bate his usual height;

You may as well use question with the wolf,  
Why he hath made the ewe bleat for the lamb ;  
You may as well forbid the mountain pines  
To wag their high tops, and to make no noise,  
When they are fretted with the gusts of Heaven ;  
You may as well do anything most hard,  
As seek to soften that (than which what's harder ?)  
His Jewish heart :—Therefore, I do beseech you,  
Make no more offers, use no further means,  
But with all brief and plain conveniency,  
Let me have judgment and the Jew his will.

Yet one other illustration of Antonio's character, in which Shakspeare recurs to the personal sombreness and fated melancholy infused so cunningly and so dramatically into the opening scene. Bassanio, in the interval while the learned doctor from Padua is brought in, seeks to assure his friend that the Jew shall confiscate him (Bassanio) before the bond shall be allowed to be executed. But Antonio knows that life, and Portia, and prosperity, home and children, honour and gay happiness, are for Bassanio, and will come naturally to him ; while it is no shock to appropriate as his own lot a destiny of equably borne misery for which the causeless and "embraced heaviness" of his former days has well prepared him. What was once mystery and seemed a dull caprice, is now, he sees, a true and apt philosophy of his experience :—

I am a tainted wether of the flock,  
Meetest for death ; the weakest kind of fruit  
Drops earliest to the ground, and so let me ;  
You cannot better be employed, Bassanio,  
Than to live still and write my epitaph.

He was not destined to die. The boy doctor from Padua was to save him. There is as little fate in sadness as in joy. Presentiment means nothing either way. And Antonio

is seen anon at lovely Belmont, gravely embarrassed by the sprightly quarrel of his friends about their ring. Again unhappy—"the unhappy subject of these quarrels"; yet "welcome notwithstanding." And presently the gentle-hearted Portia, as considerate as himself, hands him the ring that is to make peace with Bassanio; and, last of all, poor, much agonised Antonio, stands "dumb" before the lively lady, as she tells him, and will not tell him how she knows, that "three of his argosies are richly come to harbour suddenly." And so he plays his part—a gentleman always, and always a true friend, with a candid nature, always open to favourable impressions; ready to be generous even to Jews, though always dominated by the prejudice against them; certain to be boundlessly good to the few, probably the two he most loves; yet, as we may foresee, not cured of the smiling, brooding, speculative sadness, which is his second nature.

The less intimate friends of Antonio are well designed by the author, and, though their individuality is of little consequence, he has kept them well distinct. We are to judge from the diction of Shakspeare's more ordinary personages, either that playwrights in his day were expected to furnish dialogue full of eloquence and fancy; or that in his day ordinary people talked much more elaborately than now; or that he himself, pen in hand, effloresced into figures and tropes suggested by the topics of the talk. In this instance, the best talker is Salarino, and some of his conversational rhetoric is very striking. It is a pretty picture of ships that he draws when he supposes Antonio's mind to be tossing on the ocean:—

Argosies with portly sail,  
Like signiors and rich burghers on the flood,

"pageants of the sea," that

Overpeer the petty traffickers,  
That courtsey to them, do them reverence,  
As they fly by them with their woven wings.

Again, how well the language, in which he describes the proper anxieties of a shipowner, prepares the reader for the stress of calamity by which Antonio is afterwards so embarrassed.

I should not see the sandy hour-glass run,  
But I should think of shallows and of flats  
Should I go to church

And see the holy edifice of stone,  
And not bethink me straight of dangerous rocks  
Which touching but my gentle vessel's side  
Would scatter all her species on the shore  
Enrobe the roaring waters with my silks  
And, in a word, but even now worth time  
And now worth nothing? Shall I have time  
To think on this, and shall I lack the time  
That such a thing, bechanced, would come to me?

In Salanio we have a rougher man  
without spirit—but decidedly lacking  
A broad hint of the latter, that is  
a full stop when he is indulging in  
statement that Antonio has been  
represented as too talkative:  
of describing Antonio's character  
him a foil to Salanio.  
between characters who

which to flout a Jew as a lively Venetian should. With the friendly audience of a club, or a Rialto, a little wit goes a long way in deriding a subject race.

Gratiano falls to the light comedian, and there are few better parts. This rattle-brain is relieved from frivolity by his love of Bassanio, and he is thus brought into connexion with the Belmont part of the plot by making the acquaintance of Nerissa. Gratiano pursues Shylock from first to last with jokes and merry insults, and when his wit is not specially employed he flies at anything he sees. "Let me play the fool," he cries, when Antonio is pronouncing the world a stage, and he keeps up the character humorously to the end. He has plenty of ideas, and they dart mirthfully from his lips in frolicsome abundance. He believes in mirth on system, and improvises that excellent description of the

Sort of men, whose visages  
Do cream and mantle like a standing pond,  
And do a wilful stillness entertain,  
With purpose to be drest in an opinion  
Of wisdom, gravity, profound conceit:  
As who should say, I am Sir Oracle,  
And when I ope my lips, let no dog bark.

Bassanio gives an exact idea of Gratiano where he warns him that over-wildness, rudeness, and boldness of voice, though they become him happily enough where he is known, "show something too liberal" among strangers. But there is always something in what he says. Elizabethan characters, both grave and gay, are fond of generalising, and to generalise eloquently and with good illustrations a man must have a mind as well as a tongue. Here is a good specimen of the respective styles of the poetic Salarino and the excursive Gratiano. They are standing masqued under

the penthouse, wondering why Lorenzo does not come to carry off Jessica :—

- GRATIANO ; It is marvel he outdwells his hour,  
For lovers ever run before the clock.
- SALARINO : O, ten times faster Venus' pigeons fly  
To seal love's bonds new made than they are wont  
To keep obliged faith unforfeited.
- GRATIANO : That ever holds. Who riseth from a feast,  
With that keen appetite that he sits down ?  
Where is the horse, that doth untread again  
His tedious measures with the unbated fire  
That he did pace them first ? All things that are  
Are with more spirit chased than enjoyed.  
How like a younger, or a prodigal,  
The skarfed bark puts from her native bay  
Hugged and embraced by the strumpet wind !  
How like a prodigal doth she return ;  
With over-weathered ribs and ragged sails,  
Lean, rent, and beggared by the strumpet wind !

In passing we may observe how fine an effect of elocution is provided by the repetition of the expression "the strumpet-wind," throwing a fine emphasis on the phrase "lean, rent, and beggared" as contrasted with the "hugged and embraced." The young Venetians—doubtless we ought rather in this connexion to think them young Elizabethans—not only made speeches of this sort to each other and enjoyed them, but they thought such conversations worth pursuing. Lorenzo arrives, and the abduction impends, but Salarino finds time to say to his companion—"More of this hereafter." They have chanced upon a happy vein of speculation, and they mean to recur to it. I never read the minor pages of Shakspeare without having it borne in upon me—after making due allowance for stage-heightening—that the minds of ordinary men *and women* of Elizabeth's days must have been better stored, and in finer, swifter play, than in the days of Queen Victoria.

Gratiano's wit was not appreciated by Shylock, and in truth it shines more on the more jovial side of it than when it is provoked into efforts of denunciation. The tirade in the trial scene is an instance of the failure which attends wit when it leaps out of its *genre* under the influence of strong feeling. Shylock easily disposes of him, advising him sarcastically to rail the seal off the bond before giving his lungs so much trouble, and then adding, doubtless with a shrewd remembrance of the young man's reputation as a wag on 'Change :

Repair thy wit, good youth, or it will fall  
To cureless ruin.

"Cureless ruin" is a fine expression, and indeed the whole rebuke is lofty. Shylock is not my business now ; but I must interpose the observation that this is one of the passages that tell in favour of the nobler rendering of the chief character of this play. Many of the speeches could be given—and those who remember Robson in the burlesque will feel this—almost in the manner and with the accent which we associate with caricatures of Hebrew greed and vivacity, and passion, and, so delivered (as undoubtedly they used to be) might not lose much of their force nor even all their dignity. But you cannot imagine this warning to Gratiano given otherwise than with Hebraic solemnity.

Gratiano, like many other people, is funniest when on the right side of the hedge. Shylock's "Daniel come to judgment" has passed into the currency of the world's speech, but Gratiano's use of it when the tables are turned on Shylock has given it for ever an ironic tone.

The Nerissa passages are perfect comedy, and that is all that can be said of them. A blither, brighter couple were never joined together. Gratiano and Nerissa are as interesting to us as two lively friends whom we know to be as worthy

as they are entertaining. The relations between Nerissa and Portia not only are delightful in themselves, but they seem to engage the audience most agreeably in Portia's experiences with her suitors, and her sprightly suggestions herald delightfully the unchequered bliss of Bassanio's wooing and wedlock. "No more, I pray thee," says Portia to her man-servant.

I am half afeard

Thou wilt say anon he is some kin to thee,  
Thou spend'st such high-day wit in praising him.  
Come, come, Nerissa ; for I long to see  
Quick Cupid's post, that comes so mannerly.

To which Nerissa promptly replies :—

Bassanio, lord love, if thy will it be.

And Bassanio it is.

This most fortunate of lovers and friends is an instance of Shakspeare's great enriching gift, by which the personages whom he found in his original sources are refined and exalted under the plastic play of his modifying invention. The original Belmont story not only is gross, but has in it elements of barbarity, which make it in the last degree unpleasant. The Bassanio of that story is, indeed, as amiable and just as he is canny. But Shakspeare has ennobled the conception, and most beautifully filled in the outline. To say that a man is worthy of such love as Antonio's—which fulfils the divine conception of the highest human affection—is to pass upon him a splendid eulogium ; but Bassanio deserves it. We may presume that the gallant had been somewhat unthrifty ; but when was a dramatist—or any one else—really hard upon a Charles Surface ? Bassanio had no other fault. He did not even lightly love for interest,

and though he "went where money was," it was chiefly because he remembered Portia and loved her, and "sometimes had received from her eyes fair speechless messages."

Among his friends he is evidently a favourite and leader. Like most of them, he is witty; and his wit is more polished. "Good, signors, when shall we laugh?" is his first word in the play. "Gratiano speaks an infinite deal of nothing," is his summary of that agreeable rattle's conversation. It was too severe, but it marked the difference between the flighty drollery of Gratiano and the poise of Bassanio's mature and balanced wit. He unbosoms himself to Antonio, about his debts, in speeches replete with human nature. Richard Carstone could not have composed the speech in which Bassanio expounds to Antonio—of whom he is going to borrow—the immortal principle of shooting another arrow after one that you have lost; but he would have proposed a further loan with exactly the same logic though with much inferior rhetoric. The faith with which successive generations of debtors and borrowers continue to believe, from age to age, that when you have lost one arrow you are sure to find it if you shoot its fellow of the self-same flight the self-same way, is one of the most hopeful things in human nature. Such success in the policy as Bassanio reaped is, however, rare. With him even, especially considering the caskets, this bow was drawn at a venture. But in no other part of his character does he show any weakness.

He is the first to treat the merry bond seriously. When Antonio smilingly accepts Shylock's whimsical proposal, and says "there is much kindness in the Jew," Bassanio protests that he shall seal to no such bond for him. He would rather dwell in his necessity. He discerns the grave possibilities, when as yet the others are only tickled by the jest. He "loves not fair terms and a villain's mind." One desires, in such a case, to know the depths of a character.

Was Bassanio merely the favourite friend of Antonio, or was he truly worthy to be so? An answer is forthcoming in the speech on the caskets, when he is about to venture for Portia's hand. The gold, the silver, and the lead suggest to him some fine discriminations in which we may trace his own sensibilities. He reflects first on the deception of the world by ornament; the seasoning with a gracious voice of tainted pleas in law; the blessing of errors in religion by sober brows; the brave outsides of blustering cowards "whose hearts are all as false as stairs of sand;" on beauty purchased by weight—

The seeming truth which cunning times put on  
To entrap the wisest.

Those who read the Bassanio speeches and remember the Mercy speech of Portia will be of opinion that in their after life they would never be in want of intellectual resource. Nor need Portia pine for compliments. This is a vein that runs into conceits in Shakspeare, but Bassanio's conceits are better than most; and the same may be said of the conceits generally throughout the play. There is a glow of life in it that fuses improbabilities. We may doubt sometimes whether at great moments people could be so sententious, but at least we must admit that Bassanio's words realise to us the very essence of the situation. Thus after he has drawn the great prize from the leaden casket:

Like one of two, contending in a prize  
That thinks he hath done well in people's eyes,  
Hearing applause and universal shout,  
Giddy in spirit, still gazing in a doubt  
Whether those peals of praise be his or no;  
So, thrice fair lady, stand I, even so.

Observe to his credit that at the first Bassanio tells Portia

he is poor. It is nothing against him that when the friend, to whom he is so deeply indebted, is in danger of having to pay the forfeit of his bond to the Jew, Portia's husband advances pleas of equity against those of law. If Shylock insists on the sanguinary penalty when his money several times over is offered to him,

It must appear  
That malice bears down truth. And I beseech you,

he appeals to the Court—

Wrest once the law to your authority:  
To do a great right do a little wrong.

The answer of Portia, then acting as assessor, is well thought out and tersely packed into impregnable language. We read in it that strong, stern, helplessness of law in the presence of legal injustice which is an ever-present though not always equally cruel phenomenon of civilisation.

It must not be ; there is no power in Venice  
Can alter a decree established :  
'Twill be recorded for a precedent ;  
And many an error, by the same example  
Will rush into the State.

It is useful to have this thus set down, because it is desirable to be reminded of the obligation of permanent law as law, since this is for the security of society, and should tend also to care and justice and humanity in the making of laws. It is obvious, however, that even to the Venetians with the freedom of their city hanging upon their enforcement of the Jew's vengeance, the obligation must have been a very severe trial. And as some in these days seem to think that there is a sort of piety in ruthlessly enforcing legal injustice, it may be as well to note that Venice was not

Britain. The middle ages were not the nineteenth century. This was a play and not real life. Meekly as Antonio bared his bosom and bade Bassanio tell his wife "the process of his end,"—say "how he loved him,"—"speak him fair in death, and when the tale was told, bid her be judge whether Bassanio had not once a love,"—if the Jew's knife had been plunged nearest his heart, Shylock's life thereafter could hardly have been protected. "Repent not you," says Antonio,

That you shall lose your friend,  
And he repents not that he pays your debt.

But if such black and savage injustice had fallen by law on many, there would have been revolt. Above all, the highest and most peremptory teaching of such incidents is, not the supreme excellence of formally and coldly enforcing arbitrary laws, but the prime and immediate obligation of abrogating them. In this case, happily, the law had in its own technicalities security against its threatening cruelty; and, as for Bassanio, when law is laid aside, and injustice has been prevented, we leave him side by side with his friend, and swearing fond fealty to his wife by her own fair eyes, wherein he sees himself.

Of Portia, a volume might be written, but every line would have a tremor in it, lest this matchless creation should be dulled or blemished in recital or description. She, too, begins sadly, and fancies that her "little body is aweary of this great world," but, her sadness, unlike Antonio's, has a reason—*videlicet*, a love cause. She may well be depressed by the eccentric and compulsory provision which her deceased father has made for her choosing a husband; but her natural temperament is buoyant. Her wit keeps it company, and she revels in the humours of life, and in the laughing liveliness of a sprightly young womanhood. She

never giggles or chatters. She keeps the mind of the listener going. You can always say why you admire her, apart from her beauty. She touches all sorts of subjects as if her eyes shed rays of sunlight. If what she says is not always new, it is always newly put. You feel it to be set off, as she says it, with all the grace and prettiness and strength of a healthy, happy, beautiful lady, whose life and thoughts are in every sense opulent, and whose airy spirits never yet were weighted with a serious load. Yet she is not frivolous. A bright philosophy informs her thoughts; a generous judgment guides her conclusions; an earnest and undoubting affection inspires her likings and her hopes.

Her lightest words have sober references. For instance, considering what is to follow, it is curious how, early in the play, she hits on the legal principle that an offender should not be judge in his own cause. Again, observing the argumentative elaboration with which Arragon reasons himself up to a choice of a wrong casket, she exclaims—

O these deliberate fools ! when they do choose,  
They have the wisdom by their wit to lose.

She is one of that happy order of women who can afford to be playful with domestics. "Where is my lady?" says a servant. "Here! What would my lord?" says Portia. Do what she may, say what she will, we recognise that ideal type of abounding, free-hearted, free-handed, free-minded, free-spoken womanhood, which, when also fair, good, just, and kind, is not perhaps to be found in perfection anywhere, except in Iago's sketch of a paragon. The chivalrous masquerading adventure, in order to save Antonio, comes in and crowns the affluent conception with noble enterprise, as if to shut out Iago's ironical conclusion, that "such a wight, if ever such wight were, should suckle fools, and chronicle small beer."

How exquisitely the love passages are wrought need not be said. A more delicate piece of half, but only half-veiled ardour does not exist than the speech of Portia to Bassanio, in which she begs him to delay his choice between the three caskets. If such a gossamer fabric of love, and whim, and partly playful scruple, can have a moral, it is this, that coldness is never good or admirable in a woman who loves, except in proportion as she lacks the grace and policy which are the distinctive glory of her sex. The delightful speech before her Hercules makes his fray is not only an example of the delightful management of conceits which is conspicuous in this play, but is a rare and subtle texture of tenderness, tearfulness, and feminine fancy. "Let me" says Bassanio, rousing himself with swimming eyes from a dreamy dialogue of hinted love—"Let me to my fortune and the caskets." And she replies—

Away then : I am locked in one of them ;  
 If you do love me you will find me out.—  
 Nerissa and the rest, stand all aloof.—  
 Let music sound while he doth make his choice ;  
 Then, if he lose, he makes a swan-like end,  
 Fading in music. That the comparison  
 May stand more proper, my eye shall be the stream  
 And watery death-bed for him. He may win ;  
 And what is music then ? Then music is  
 Even as the flourish, when true subjects bow  
 To a new crowned monarch : such it is,  
 As are those dulcet sounds in break of day  
 That creep into the dreaming bridegroom's ear,  
 And summon him to marriage. Now he goes,  
 With no less presence, but with much more love,  
 Than young Alcides when he did redeem  
 The virgin tribute paid by howling Troy  
 To the sea monster : I stand for sacrifice ;  
 The rest aloof are the Dardanian wives,  
 With bleared visages, come forth to view  
 The issue of the exploit. Go Hercules !  
 Live thou, I live :—With much much more dismay  
 I view the sight than thou that mak'st the fray.

In the yet lovelier, because unconstrained, speech in which Portia gives herself to Bassanio after he has chosen the right casket, we perceive the truth as well as the beauty with which Shakspeare has developed the character. She is now free to speak, and freedom makes her serious. "An unlesson'd girl, unschooled, unpractised : happy in this, she is not yet so old but she may learn ; happier than this, she is not bred so dull but she may learn."

Happiest of all, is that her gentle spirit  
Commits itself to yours to be directed,  
As from her lord, her governor, her king.

How little she needed training—what an apt scholar such a nature is—is illustrated when Portia comments on the friendship between Antonio and her lord.

In companions  
That do converse and waste the time together,  
Whose souls do bear an equal yoke of love,  
There must needs be a like proportion  
Of lineaments, of manners, and of spirit ;  
Which makes me think that this Antonio,  
Being the bosom lover of my lord,  
Must needs be like my lord.

In her most serious moments, however, she is jocose, and it is in a mood, outwardly, of raillery that she sets out with Nerissa to play the part of a doctor learned in the law. Her humorous anticipations of their adventure, her sketch of the young men of her time, her amusement at the prospect of Nerissa and she seeing their husbands, are in a vein of high comedy which some might think unwomanly. Naturally combined with earnest purpose, fine accomplishments, and thorough mental cultivation, it draws from us the admission that the earlier dramatists had an art, which has been lost, of boldly conceiving handsome, lively, intellectual women,

with a dash of audacity, and more than a dash of adventurous fun. Whether women, too, have changed—whether increased refinement has made the ice thin—whether it is no longer possible, as it must have been in Queen Elizabeth's days, for women to be as frank as fair, as free in converse as they are virtuous in heart, as capable as men of intellectual and politic prowess, and yet devoid of the assumption and affectation which rob female ability of feminine charm—these are not questions of dramatic or literary criticism.

When Portia comes into court, she is acting. Not only is an actress playing Portia, but Portia is playing the part of "a wise young judge." This gives great subtlety to her share in the scene. How well she plays her part is a commonplace of literature. There have been niceties of criticism on it which have not discredited its consistent beauty. Blackstone was prosaic enough to say that it was a little out of character for Portia to refer Shylock to the Christian doctrine of salvation, and the Lord's Prayer. There are two answers to this. It would never occur to Portia that she need go out of Christianity for her arguments. Moreover, if she had thought of it, she might justly have been of the opinion that the general principle of salvation by mercy, and that of rendering deeds of mercy if we expect mercy for ourselves, deserve to be received of all men, without distinction of dogmatic basis. The whirligig of criticism brings in its revenges, and if it is true that the Lord's Prayer was known before it was adopted by our Saviour, a man so deeply imbued as Shylock with the common lore of his religion may have been as well prepared as any Christian to give weight to Portia's argument that "we do pray for mercy."

What has fastened itself on the mind of men in Portia's part in the trial scene is the sublime pathos, the unanswerable argument of the speech on mercy—which has probably

softened more hearts than any other piece of literature, in so far as hearts can be softened by thoughts—and the ever-beautiful figure of the fair young lawyer, pleading with the implacable Jew like an angel of clemency, and anon condemning him almost as serenely, with countenance scarcely changed, and aspect still heavenly, like an angel of justice. Only later, and by deliberate mental operation—chiefly as I have said above, owing to the enlarging scope of the best acting of Shylock—has come the settled, humane conviction, that all the barbarism was not on the Jew's side. Though he was barbarous, the Christians of that period were not entitled—perhaps the men of no period have yet been entitled—to look down from a height of absolute superiority on him. His most savage claim was but bettering their instruction, and even returning evil for special evil, that had been lately done to him—by Christians, as Christians to him as a Jew—racking and tearing his heart as he and his associates well knew, not less terribly than Antonio would suffer if the pound of flesh were exacted. Shall we ever reach the time when without shame of face or heart, we may condemn and execrate intolerance and racial prejudice?

Meanwhile, like a monument of Heaven's kindness, which blesses the just and the unjust, Portia stands winning all the ages over to gentle doctrines of charity and mercy, which even she, with all her sweetness, only forensically understood. It is the glory of all goodness and justice to be fully revealed only in the Abstract. It is in the abstract that the grand doctrine of this Trial Scene can never be challenged by Jew or Gentile, but must be read for ever, emblazoned upon the firmament of civilisation; at once the charter of the weak and the code of the strong. But it is a not less happy truth that, if the Abstract is the sole standard, the Personal touches our hearts more nearly and wins us sooner to the Right. Many a man, at whose door Mercy would knock

loudly and solemnly in vain, relents if fair Portia's memory do but touch him on the shoulder ?

There are three couples of lovers in "The Merchant of Venice." We have yet to speak of Lorenzo and Jessica. The elopement of the latter, contrived and brought off so light-heartedly by several young Venetians, has been as lightly regarded by centuries of readers and playgoers—all because Jessica is pretty and pleasant. I am not in love with her. I cannot get over her conduct to her father. She courts well, talks well, picks up friends with the readiness of her race, and would probably flirt well, but that Jewesses are somewhat constant. But she was an abominably bad daughter. Her leaving her father, and her allusions to her home in conversation, show her to have been on that side of conduct heartless, shallow, unprincipled, and felonious—a very reprehensible, and at that stage of her existence, vulgar-souled girl, however nice she may have been to know and run away with. Only very bad conduct towards her, on the part of her father, could palliate her conduct, and it is incredible that he behaved seriously ill to her at all. Shakspeare could not help knowing exactly the sort of easily-led-away, promptly-flippant young person Jessica must be to behave as she did, and when Shakspeare knew anything he was obliged to be true to it. But it is not at all to be supposed that he regarded Jessica otherwise than with liking or expected any one to disapprove of her. Nor is it to be looked for that opinion will change. Nevertheless she was utterly unfilial; incapable of her father's passion and enthusiasm for their own people. In their home she saw nothing but squalour and gloom. She did not seek to brighten it, but to run away from it. The house was "hell," she says, and she liked Launcelot Gobbo because he was "a merry devil," and made the place less tedious. She thought

it no sin to be ashamed of being her father's child. As she parts with the old man for the last time she jauntily exclaims in soliloquy :—

Farewell, and if my fortune be not crossed  
I have a father, you a daughter, lost.

She has pretty ways when she gets to Belmont, and no honeymoon love-making could be more charming than hers and Lorenzo's, on that beautiful night in the garden there. I am no more insensible than Portia and the others to her fascinations ; but, as she prattles, the forlorn ravings of old Shylock, when he lost her, come back into my ears, and Jessica seems to spoil the moonlight. Yet we must, in fairness, remember that she usually saw the worst aspect of her father's character, for he was likely to be mean and querulous, and that it is a common circumstance for girls of shallow character to be alienated from their homes by the poorness and the dulness of them. Besides, a modern French poet says that all women have moonlight in their souls.

Lorenzo, her husband, is a gentlemanly young fellow, with many pleasant and profitable ideas, but with that side of his character which would deter him from despoiling a Jew wholly uncultivated. His first important speech, in which he speculates on the wealth Jessica will purloin for him, is as low-minded as any cynic could desire ; but when not talking of Shylock he talks well. The words in which he compliments Portia on her god-like amity in bearing Bassanio's absence for Antonio's sake are well chosen. His description of punsters, who "for a tricky word defy the matter," has point in it. His sweet talk in the garden with Jessica is moonlight distilled into words. The scene, the sounds, the stillness, all are there ; and not in a mere sensuous vehicle, for you may sit long and think worthily on

a summer night of many a pregnant text in this lambent mosaic.

Sweet soul, let's in, and there expect their coming.  
And yet no matter ;— Why should we go in ?  
My friend Stephano, signify, I pray you,  
Within the house, your mistress is at hand ;  
And bring your music forth into the air.—  
How sweet the moonlight sleeps upon this bank !  
Here will we sit and let the sounds of music  
Creep in our ears ; soft stillness, and the night,  
Become the touches of sweet harmony.  
Sit, Jessica : look how the floor of heaven  
Is thick inlaid with patines of bright gold.  
There's not the smallest orb which thou behold'st  
But in his motion like an angel sings,  
Still quiring to the young eyed cherubins :  
Such harmony is in immortal souls ;  
But whilst this muddy vesture of decay  
Doth grossly close it in, we cannot hear it.

We will return for a moment to this last act of the play, when we have briefly disposed of the remaining characters. Of Gobbo and his father I will say nothing. They are Shakspearian clowns, and Launcelot is full of the usual quaint drollery. The "highday wit" of Portia's servant in introducing Bassanio is quite a splash of Enphuism in Act 2. Salerio, another Venetian gentleman, if he is another, and not Salarino, adds to the many descriptions of the Jew, by a sketch of his demeanour during the abeyance of the bond. The Duke is well drawn as president of the court, and expresses himself with proper freedom as to the suit which Shylock follows. Among the suitors the Prince of Morocco is a sort of wooden Othello. His long speeches, however, are wearisome—the worst sort of Shakspearian writing—length and windiness for no sort of purpose. Arragon is well marked out as a proud moralist, but he also is too long for stage consumption.

Act the fifth I have called the most exquisite anti-climax in dramatic literature. Shakspeare, in many cases, lets his characters linger on the stage after the audience begin to long for the curtain. In this instance he brings most of them back again to be welcomed with quiet but intensest ecstasy. If that pretty line, "a gem of purest ray serene" had not been written, surely, some one would have murmured it extempore, in gazing on the last act of "The Merchant of Venice." The serious interest has ended with the withdrawal of Shylock from the court. The Jew comes not again. But there is Belmont bathed in the moonlight far away. Two of the married lovers are there keeping house for Portia. Portia and Nerissa must return there post haste. Bassanio, Gratiano, the redeemed Antonio, have the same destination. All things end, however troublous. If things end not troublously, those who have gone through anxiety and vicissitude, settle down, or glide into the usual course of life. If this can be made interesting, it may form a fine closing episode for a drama, all the interest of which is over at the end of the fourth act. Such was Shakspeare's idea, and it works out triumphantly. The imagination, aided by the pretty colloquies of Lorenzo and Jessica, easily realises the soft Italian air, the moonlit night, the towers of Belmont. Reality is closely studied. The characters arrive by degrees. The atmosphere of a bland country seat, thus alive in the midst of a summer night, is diffused around. The spirit of the placid, moving, sparkling picture inspires the meditations of the *dramatis personæ*, as well as the sensibilities of the audience. The dialogue of Portia and Nerissa, beginning "That light we see is burning in my hall," touches to the finest degree of natural thoughtfulness the quiet notes of the scene. Then as the torches burn brighter, and the bustle thickens, the comedy revives. The husbands have parted with their rings and must explain themselves. The audience

enjoy the seeming quarrel, while Antonio stands sorrowful and half-moody by—it being more than even his sadness bargained for to make mischief between his friends. Then all is cleared up, and Jessica is enriched with gold, and the other lovers with prospects of indescribable happiness. “It is almost morning,” and “The Merchant of Venice” is at an end.



## EPIGRAMMATIC LITERATURE.

By RICHARD STEEL.

I HAVE sometimes wandered, in the pleasant years of the past, along the banks of a mountain stream which finds its way over beds of clay slate rock to the sea. Here and there it is traversed and almost impeded by ridges of quartz, which were originally veins in the clay slate, but which, owing to their harder substance, have remained, whilst the softer stone which once enshrined them has been worn away by the constant rush of the water and the solid particles which the current brings with it. In much the same manner the great stream of time flowing over the intellectual remains of extinct humanity sweeps into the ocean of forgetfulness the great mass of the literature of the generations which have passed away, but leaves behind it fresh and unworn certain lesser forms of literary effort. As biologists tell us that some minor living beings possess a greater power of persistence and indestructibility than others of more pretentious and elaborate constitution, so it is, certainly, in their kind and degree, with those forms of poetical and prose composition to which the title of epigrammatic may fairly be applied.

This Epigrammatic Literature, then, may be classified as consisting primarily of the epigram proper, the anecdote, the proverb, the aphorism, and the apophthegm. Such a classification may, at any rate, be taken as provisionally sufficient,

although, as we shall see at a later stage of this paper, it is not one of a rigid and scientific character. But it is convenient to adopt it as our starting point, inasmuch as it serves at once to illustrate the first position which we should bear in mind, which is that the approach to immortality which the various forms of epigrammatic literature attain is always in direct proportion to their terseness, lucidity, and point. Attracting attention by their aptness, and easily remembered in virtue of their brevity, they find their way from one human being to another, and hardly need to be either enshrined in verse, or recorded in print, in order to secure their journey safe and unscathed through generations and centuries of the life of humanity.

As might indeed be inferred, from the definition I have given to the term, "Epigrammatic Literature," in its widest sense, is coeval with literature itself, the most important survivals of the wisdom and knowledge of the ancients bearing much of this character, and probably owing in a high degree their preservation in popular regard to the Attic salt of the epigrammatic passages which they contain. Thus ancient history, so far as it throws light upon the real social facts of past times, is a tissue of anecdote, as may be seen for example in the pages of Herodotus and Plutarch. And the sacred literatures of the great religions again abound also in epigrammatic matter, mainly of course of the didactic kind, a fact which is familiar to us all in the books of Job, the Psalms, Proverbs, and Ecclesiastes, and which receives abundant illustration in those discourses upon which the Christian world looks with the highest possible degree of reverence. The most convenient illustrations, however, which, considering the usages of our Society, I can venture to give of the manner in which epigrammatic forms thus permeate the best literature, are supplied by the comparatively modern writings of the greatest of English dramatists,

and those of one or two other English poets. The well known lines \* :—

To gild refined gold, to paint the lily,  
To throw a perfume on the violet,  
To smooth the ice, or add another hue  
Unto the rainbow, or with taper-light  
To seek the beauteous eye of heaven to garnish,  
Is wasteful, and ridiculous excess.

form a true epigram of the Grecian type.

So again the passage † :—

The purest treasure mortal times afford,  
Is—spotless reputation ; that away,  
Men are but gilded loam, or painted clay.

constitutes another epigram of the same type, although, in qualification of such a statement, we may indeed rightly claim that our Bard of Avon, even in epigrammatic excellence alone, so far surpassed the highest efforts of the Greek, that the phrase “ of Grecian type,” as applied to his finished efforts, becomes too limited and inadequate for the occasion. For the memory of every Shakespearian student will supply him with scores of these gems of thought, and he will recognise in them not only the highest efforts of their author’s literary genius, but also the fact that it is in these particular passages that that genius has made the deepest impression upon his powers of verbal recollection.

Amongst other English poets, Pope, and his great admirer, Byron, are the most remarkable for the epigrammatic form of many of their passages. And it is notable that, perhaps for this reason, and, although some audacious critics dare to question the claims of Pope to be regarded as a poet at all, he who is certainly, after Shakespeare, the most

\* *King John*, Act iv. † *King Richard II*, Act i.

epigrammatic of English versifiers is also by much the most frequently quoted. His passages :—

Honour and shame from no condition rise ;  
Act well your part, there all the honour lies.

A little learning is a dangerous thing ;  
Drink deep, or taste not the Pierian spring :

Know then thyself, presume not God to scan ;  
The proper study of mankind is man.

Vice is a monster of so frightful mien,  
As to be hated needs but to be seen ;  
Yet seen too oft, familiar with her face,  
We first endure, then pity, then embrace.

And many others that might be cited, are all true epigrams, and will ever keep their firm hold upon the memories of many who to their loss have never studied as they ought, the *Essay on Criticism* and the *Essay on Man*.

Well indeed might Dean Swift, who was himself a master of condensation, write :—

In Pope I cannot read a line  
But with a sigh I wish it mine ;  
While he can in one couplet fix  
More sense than I can do in six.

Of the poets whose writings are less copious, Gray is specially remarkable for his epigrammatic style, and as two of his verses are amongst the most beautiful efforts of the kind in our language, I make no apology for introducing them here. They are both taken, as you will observe, from his *Elegy* :—

The boast of heraldry, the pomp of power,  
And all that beauty, all that wealth, e'er gave,  
Await alike th' inevitable hour :—  
The paths of glory lead but to the grave,

Full many a gem of purest ray serene  
The dark unfathomed caves of ocean bear;  
Full many a flower is born to blush unseen,  
And waste its sweetness on the desert air.

It is, however, evidently impossible to deal with our subject to-night upon lines so extensive as a full consideration of the manner in which epigrammatic form enters into much of our best literature would suggest. We merely refer to, and have illustrated this fact, for the purpose of gaining at the outset some adequate idea of the scope of this epigrammatic literature taken as a whole, and now dismiss this more general aspect of the matter, with the suggestion that to follow it up adequately would furnish a wide field of intellectual charm to those who delight to cull the choicest blooms in the winding and pleasing side-paths of literary research. We will ourselves keep to the main avenue, and restrain our further dissertation within reasonable limits, by dealing chiefly with those epigrammatic forms only which have not remained bedded in any original matrix, but which lie scattered in sparkling profusion upon the surface of the literary world around us.

The first notable collection, then, in profane literature, of these isolated literary treasures, is to be found in what is called the Greek Anthology, a collection of some 4,500 epigrams, as they are usually termed, composed from time to time during many centuries by a great number of different authors. The epigram, so far as the Greeks were concerned, was, it happens, the subject of a very clear and distinct evolution. As the etymology of the word implies, an epigram, with them, originally meant an inscription. These inscriptions were used by them, in the first instance, either to commemorate the dead (a custom which we ourselves still practise in a similar manner by means of inscriptions on tombstones and memorial tablets), to record the erection of

some building, or to signalise some other notable occurrence of a public character. Now the ancient Greek used stone as his building material, and thus got into the way of engraving what he had to say upon stone, or, in some instances, upon metal. And it was very probably this circumstance, quite as much as his natural good taste, that impressed him with the importance of condensing his inscriptions into as few words as possible. Some illustrations of these original epigrammatic inscriptions are to be found in the pages of early Greek literature. Thus Herodotus gives us several, the most notable of which relates to the gallant defence by the Spartans of the pass of Thermopylæ against the myriads of Xerxes. He tells us that this epigram ran as follows :—

Stranger, go tell the Lacedæmonians, that we lie here, obedient to their commands.\*

A still more ancient inscription of this character is preserved, which is attributed to Cleobulus, one of the seven sages of Greece, and which has been translated as follows † :—

Sculptured in brass, a virgin bright,  
On Midas' tomb I stand,  
While water cools, while flowers delight,  
While rivers part the land ;  
While ocean girds the earth around ;  
While, with returning day,  
Phœbus returns, and night is crowned  
By Luna's glittering ray ;  
So long as these shall last will I,  
A monument of woe,  
Declare to every passer by  
That Midas sleeps below.

It was not, however, we may be sure, long before the

\* Book vii, 228.

† *Collections from Greek Anthology*, Merivale, 1833.

Greek, with his natural taste and refinement, saw that the terse mode of expression, which was so convenient for the purpose of inscription upon stone, was peculiarly well adapted to other purposes. It was obviously suited to engrave anything upon the nobler material of the human memory, and thus, in time, became the vehicle of the many beautiful thoughts which, in the form of the epigrams of the Greek Anthology, have furnished a mine of poetic wealth to writers of later date. These Greek epigrams, however, differed considerably from the short poems to which the term would now be applied. In the more restricted use of the word in the present day, the term epigram has become specialised, and is appropriated chiefly to short poetical effusions answering to the following description, which, by the way, is itself an epigram, translated from the Latin of an unknown author :—

The qualities all in a bee that we meet,  
In an epigram never should fail;  
The body should always be little and sweet,  
And a sting should be felt in its tail.

But the Greek epigrams of the Anthology were usually bees without stings, and were not always by any means little. Many of them were rather, in fact, what we should now term sonnets. However, I have selected for the needful purpose of illustration one or two which do not differ very widely from the modern conception of the epigram. Thus Sappho sings in a very practical mood\* :—

Wealth without virtue is a dangerous guest,  
Who holds them mingled is supremely blest.

Ariphron of Sicily again, in lines which, as translated by the poet Cowper, remind us strongly of Milton's beautiful

\* Merivale, *op. cit.*

"L'Allegro," and were very probably present to Milton's mind when he penned that poem, thus apostrophises Hygeia, the goddess of health :—

Eldest born of powers divine !  
 Bless'd Hygeia ! be it mine  
 To enjoy what thou canst give,  
 And henceforth with thee to live :  
 For in power if pleasure be,  
 Wealth or numerous progeny,  
 Or in amorous embrace,  
 Where no spy infests the place ;  
 Or in aught that Heaven bestows  
 To alleviate human woes,  
 When the wearied heart despairs  
 Of a respite from its cares ;  
 These and every true delight  
 Flourish only in thy sight ;  
 And the Sister Graces three  
 Owe themselves, their youth to thee ;  
 Without whom we may possess  
 Much, but never happiness.

Another very beautiful survival of Sappho's muse is translated as follows \* :—

Unknown, unheeded, shalt thou die,  
 And no memorial shall proclaim  
 That once beneath the upper sky  
 Thou hadst a being and a name.

For never to the Muses' bowers  
 Didst thou with glowing heart repair ;  
 Nor ever intertwine the flowers  
 That fancy strews unnumbered there.

Doomed o'er that dreary realm alone,  
 Shunned by the gentler shades, to go ;  
 Nor friend shall soothe, nor parent own  
 The child of sloth, the Muses' foe.

\* Merivale, *op. cit.*

A much later, but unknown, Greek, produces the following\* :—

I was poor,—but I was twenty,—  
 Now at threescore I have plenty,  
 What a miserable lot!  
 Now that I have hoarded treasure,  
 I no more can taste of pleasure :  
 When I could I had it not.

Another of the later writers of Greek epigrams, Diogenes Laertius, is specially worthy of passing mention,—not, indeed, because he at all excelled in their composition,—but on account of the use he continually puts them to, which illustrates strongly, and in an instructive manner, the biographical value which these little poems may possess. As you are aware, Diogenes Laertius wrote the lives of eighty philosophers, and in many of these lives he gives his readers epigrams of his own construction upon the worthies with whose personal history he is dealing. They are none of them at all good as poetry, but they always embody a reference to some incident in the life, or connected with the death, of the philosopher of whom he is writing. And there can be little doubt that we see here, in these slight sketches, the process of incubation by which many of the lesser, but not the less valuable, facts of past history have incorporated themselves with the traditions of the past, and come down to us, in some cases, almost as perfect as the fossil traces of animals and plants upon the rocks which have preserved them amongst centuries of geological change.

The only epigram however recorded by Diogenes Laertius,† which is really worth quoting as poetry, is one which he takes from Euripides :—

Who now can tell whether to live may not  
 Be properly to die. And whether that  
 Which men do call to die, may not in truth  
 Be but the entrance into real life ?

\* Merivale, *op. cit.* † *Life of Pyrrho*, viii.

Next in point of literary history, and overlapping indeed chronologically the later Greek epigrams, came the efforts of the Latin writers. Of these Martial was chief and left behind him some sixteen hundred, from amongst which I will give you one or two of his best. The first is as translated by Addison, and explains its own application to one of those amiable but cantankerous people we sometimes meet :—

In all thy humours, whether grave or mellow,  
Thou'rt such a touchy, testy, pleasant fellow,—  
Hast so much wit, and mirth, and spleen about thee,  
There is no living with thee, nor without thee.

Another, referring to a well-known incident, is thus rendered by Steele, in the *Tatler* :—

When the chaste Arria reach'd the reeking sword,  
Drawn from her bowels, to her honoured lord ;  
" Trust me," she said—" For this I do not grieve,  
I die by that which Pætus must receive."

Juvenal, again, recurring to the primitive idea of the epigram, gives us the following inscription for the urn containing the ashes of Alexander the Great :—

In this small urn the youth of Pella lies,  
Whom one whole world itself could not suffice.

Let us now, however, come with a bound down to the more modern epigrams of our own English literature, and this with the more reason that the few from this source which I shall venture to quote, taken together with those already cited from Greek and Roman writers, supply us with all the material which we shall require for that classification of these *jeux d'esprit* which I shall shortly have to submit to you as a step towards any adequate treatment of the sub-

ject which, taken as a whole, we are discussing. Amongst the historical English epigrams, there is none better known than the somewhat hackneyed one of Rochester upon Charles the Second :—

Here lies our sovereign lord the king,  
Whose word no man relies on,—  
Who never said a foolish thing,  
And never did a wise one.

Another of the same cast, from the *Rolliad*, and supposed to be a dialogue between Pitt and Dundas, shews that some aspects at least of the conditions of Parliamentary life have somewhat improved in these later days :—

Pitt—"I cannot see the Speaker! Hal,—can you?"  
Dundas—"Not see the Speaker? Hang it, I see two!"

These however cannot be said to possess much, if any, poetic merit, and are much inferior in other respects to many that may be cited. Take, for example, Pope's epigram upon Sir Isaac Newton :—

Nature and Nature's laws lay hid in night:  
God said, "Let Newton be!"—and all was light.

Or that of Dryden upon Milton :—

Three Poets, in three distant ages born,  
Greece, Italy, and England did adorn.  
The first in loftiness of thought surpassed,  
The next in majesty, in both the last.  
The force of nature could no further go—  
To make a third, she joined the former two.

It would be difficult, however, in delicacy of criticism to surpass the following upon David Garrick, written by the Rev. Richard Kendal at a time when King Lear was being

acted in London by both Garrick and his contemporary, Barry :—

The town has found out different ways  
To praise its different Lears;  
To Barry it gives loud huzzas,  
To Garrick only tears.

A king? Aye every inch a king—  
Such Barry doth appear:  
But Garrick's quite another thing—  
He's every inch King Lear.

To the same class of epigram, that is to say, those in which some incident is chronicled, may be assigned the beautiful Latin epigram by Crashaw, sometimes wrongly attributed to Dryden, which is thus rendered into English :—

When Christ, at Cana's feast, by power divine,  
Inspired cold water with the warmth of wine,  
"See," cried they, while in red'ning tide, it gushed,  
"The bashful stream hath seen its God, and blushed."

Turning now to another species of epigram, those of the reflective and didactic sort, we have among them, in English, the well-known couplet of Sir John Harington, godson of Queen Elizabeth :—

Treason doth never prosper ; what's the reason?  
For if it prosper, none dare call it treason.

And that very beautiful one, much favoured by Dr. Johnson, for which we are indebted to Dr. Doddridge, and of which Doddridge's own family motto, "*Dum vivimus vivamus*," was the subject :—

"Live, while you live," the epicure would say,  
"And seize the pleasure of the present day."  
"Live, while you live" the sacred preacher cries,  
"And give to God each moment as it flies."  
Lord, in my views let both united be—  
I live in pleasure, when I live to thee.

The purely satirical or humorous epigram is, of course, of a lower class altogether, but I may perhaps venture upon a few. The first is a translation from the Latin, and is given by way of advice to the reader of Bishop Burnet's *History of his own Times*\*:—

The Hebrew characters are backward read,  
 The crab-fish backward crawls with awkward tread;  
 The tender virgin, scorched by Cupid's fires,  
 Will seem to hate the man she most desires;  
 The subtle courtier most obsequious waits,  
 And most pretends to love whom most he hates.  
 As Hebrew books are read, as crab-fish move,  
 As virgins hate, and as sly courtiers love,  
 Just so may Lucian, nay, and Burnet, too,  
 Each boldly vouch their histories are true.

Less savage, and much more humorous, is the manner in which the Rev. Charles Townsend narrates the fact of his house having been broken into by thieves:—

They came and prigged my stockings, my linen, and my store;  
 But they couldn't prig my sermons, for they were prigged before.

We must not omit, moreover, in consideration of the debt of gratitude under which all succeeding generations have lain to him, an effort of Boswell's epigrammatic muse which he himself records† with pardonable complacency:—

In the blithe days of honeymoon,  
 With Kate's allurements smitten,  
 I loved her late, I loved her soon,  
 And called her "dearest kitten."

But now my kitten's grown a cat,  
 And cross, like other wives;  
 Oh, by my soul! my honest Mat,  
 I fear she has nine lives.

\* D'Israeli's *Dissertation on Anecdotes*. † Boswell's *Life of Johnson*.

The following extremely caustic specimen was propounded by Garrick, in allusion to a certain Dr. Hill, whose genius found vent not only in the composition of the celebrated *Mrs. Glassee's Cookery Book*, but also in the lighter fields of dramatic literature. Garrick thus certifies to the doctor's merits :—

For physic and farces  
His equal there scarce is ;  
His farces are physic,  
His physic a farce is.

I am unable to give the author of the following specimen :—

To wonder now at Balaam's ass is weak ;  
Is there a day that asses do not speak ?

Or of another still more cynical, but possessing, alas ! sometimes a sad element of truth :—

Whence comes it that in Clara's face  
The lily only has a place ?  
Is it that the absent rose  
Is gone to paint her husband's nose ?

It is refreshing to turn from these splenetic exhibitions to a beautiful epigram by Herrick, which resembles the Greek epigrams to which we have already referred :—

Some asked me where the rubies grew ?  
And nothing did I say ;  
But with my finger pointed to  
The lips of Julia.  
Some asked when pearls did grow, and where ?  
Then spoke I to my girl,  
To part her lips, and shewed them there  
The quarelets of pearl.

But it is now quite time to remember that Martial tells us :—

He who a hundred epigrams reads o'er  
No ill's enough for him if he wants more.

and I will stop considerably short of that number, and this with the more reason that I have now put before you as many as are requisite to establish quite amply the position to which I next wish to direct your attention. For the sake of completeness, let us, however, just add to our present stock one or two specimens of another important variety of epigrams—epitaphs or tombstone inscriptions. These being the descendants in the eldest direct line of the original Greek epigrams, it would be improper to pass them over without notice, although the gloomy associations connected with them make them, perhaps, not so popular as their less sepulchral cousins.

Some few of the English epigrams I have already given were nominally of this character; as, for example, Pope's upon Newton, and that of Rochester upon Charles the Second. Those I shall now cite are real genuine articles. One of the best known, and, at the same time, most truly epigrammatic, is that upon the tombstone of the Dowager Countess of Pembroke (*ob.* 1621), which is attributed by some writers to Ben Jonson, but which, according to the industrious Pettigrew, is the work of one William Browne :—

Underneath this sable hearse  
Lies the subject of all verse—  
Sydney's sister, Pembroke's mother;  
Death, ere thou hast slain another  
Fair and learned and good as she,  
Time shall throw a dart at thee! \*

Perhaps as striking, however, as any of these memorials,

\* Pettigrew adds to this another stanza of much inferior merit.

is the following, composed by Mason, and inscribed upon the tomb of the poet Gray in Westminster Abbey :—

No more the Grecian muse unrivalled reigns,  
To Britain let the nations homage pay !  
She boasts a Homer's fire in Milton's strains,  
A Pindar's rapture in the lyre of Gray.

Garriek's epitaph upon William Hogarth is the last I shall trouble you with :—

Farewell ! great painter of mankind,  
Who reached the noblest point of art ;  
Whose pictured morals charm the mind,  
And through the eye correct the heart.  
If genius fire thee, reader, stay ;  
If nature touch thee, drop a tear ;  
If neither move thee, turn away,  
For Hogarth's honoured dust lies here.

And now, let us resume the main current of our argument.

The conclusion, then, or position, which we reach through these various illustrations, is, as some will no doubt have already anticipated, that the epigram, so called, is not except in respect of form a true literary species at all. You will remember that, at the outset of this paper, we also enumerated the anecdote, the proverb, and the apophthegm ; as belonging to the same genus of epigrammatic literature, and it is evident as soon as stated that, so far as their substance and matter are concerned, all of these epitaphs and epigrams which I have quoted would either fall under one or other of these headings, or, in the more complex case, consist of one or more of these headings combined. Most of them clearly are of the anecdote class, and are really versified anecdotes. Perhaps I may just quote one

more of this sort, which will put the fact just referred to still more clearly before you :—

Old South, a witty Churchman reckoned,  
Was preaching once to Charles the Second;  
But much too serious for a Court  
Who at all preaching made a sport :  
He soon perceived his audience nod,  
Deaf to the zealous man of God.  
The doctor stopped; began to call,  
“ Pray, wake the Earl of Lauderdale :  
My Lord ! why 'tis a monstrous thing—  
You snore so loud—you'll wake the King ! ”

Of course this is an anecdote in rhyme.

Next in importance to the narrative epigram comes the didactic or reflective, which is evidently an apophthegm or striking truth versified. You are all probably familiar with the maxims of Rochefoucauld for example, and it goes without saying that these are true prose epigrams and only distinguished by the circumstance of form from that variety of the recognised epigram which we now describe as the didactic.

Without pursuing these analytical considerations then any further to their obvious issue, it follows evidently from them that to deal with the subject of epigrammatic literature, even as limited by ourselves at an earlier stage of this paper, in complete detail, it would be necessary, even if we drop the sonnet class entirely out of view, to take up nevertheless the whole area of anecdote, proverb, apophthegm, and aphorism. But as life is short, and human patience somewhat shorter, I purpose to confine my further remarks only to the very important literary species now termed anecdote, and leave the rest to be dealt with upon some other and more convenient occasion.

I refer, then, advisedly to this sort of epigrammatic literature as a literary species *now* termed anecdote, for like many other words in use in our language, the term "anecdote" is not now employed in its original sense. Its derivation is obviously from the Greek, and it meant at first something not previously published, and was so used by Cicero. Even so late as the time of Dr. Johnson, its primary and almost sole application was to a biographical incident,—a minute passage of private life. But the equivalent word in the French language was even then used for any interesting circumstance, whether personal or otherwise, and in this general sense it came to be employed in this country soon after the Johnsonian era. Now-a-days, the meaning of the word has widened still further, and includes in its application very frequently matter of an extremely apocryphal character, put together in many cases presumably either for the purpose of illustrating an argument or of creating a laugh. It is, indeed, noteworthy that, in the political arena, a still further evolution has taken place in the meaning of the word quite lately, it having become customary with some members of the Imperial Parliament to use the phrase "anecdotes" as synonymous with narratives for the truth of which no evidence can be adduced. But in a general way it may be taken as true that the anecdote is now in popular conception almost identified, except in form, with the epigram, in respect of the fact that no narrative is at present usually termed an anecdote unless it is brief, and has, like the epigram, a certain amount of direct point, either illustrative, satirical, or humorous.

Taking the word, then, in this limited sense, which modern usage will thus permit,—and it is in this sense only that the investigation of this branch of the subject falls within the scope of the present paper,—it is evident at the

outset that the importance of this division of epigrammatic literature is very great indeed.

Prose anecdotes are far more numerous than versified epigrams, and the treatment which these harmless and often useful forms of literary effort receive is one of those crying grievances which has never yet met with a competent reformer, and but rarely with an exponent. There are few men, however worthy and estimable in the various relations of life, whose consciences can be entirely clear in this regard, unless, indeed, that with the callousness of hardened guilt they have either forgotten their past crimes or no longer even realise the cruelty of their present practice. No sooner has a simple prose anecdote started upon its innocent career than it is mauled, ill-treated, and twisted by one unscrupulous narrator after another in its peregrinations until its earliest friends would hardly recognise it. There is no Society for the protection of Anecdotes, and you are confronted again and again, clad in sorry and ill-fitting raiment, with some old anecdote acquaintance which has never deserved to be treated in such a fashion. And this, unfortunately, does not apply at all so much to those lengthy and rather tedious narratives which are sometimes, but from our point of view incorrectly termed anecdotes, such as are recorded of good children who died young, such as are frequently used to sadden the spirits of diners out, or such as Homer's heroes used occasionally to bludgeon each other with before they commenced the more epigrammatic work of the javelin and the sword, but in a far higher degree to the choicest and most pithy individuals of the anecdote race.

It would be impossible for me, however, to deal in this paper with all the different kinds of torture and mutilation to which anecdotes are thus subject; nor would it, indeed, be profitable for us to do so. But there is one sort of transfor-

mation to which they are exposed with special frequency, which it is quite essential for us to take note of, as it has a very important bearing upon their historical and scientific value. This is a process of *substitution* which I will illustrate to you.

We take, for example, the well-known anecdote of a certain greedy little boy, whose memory has been preserved to us by the celebrated epicure, Brillat Savarin.\* This boy, as you will recollect, was observed to weep bitterly and loudly towards the close of a grand entertainment. "My dear boy, what is the matter?" asked one of the guests at the table. "I cannot eat any more," responded the young glutton. "Well, well," rejoined the senior gourmand pitifully, "dry your eyes, my little man, and fill your pockets!" Instead of deriving comfort, however, from his kindly suggestion, the sufferer, uttering a yet louder wail of anguish, exclaimed, "I can't, I can't; they are full already." Now it might have been thought that so unimportant an incident as this would have been let alone and uninjured by the anecdote perverter, but such, alas! is far from being the case. No sooner was the story promulgated, than the process of substitution commenced, and has continued to this very day. A serious writer of tracts promptly made Beau Brummell in his boyhood the delinquent and hero of the occasion, and pointed his moral against the leaders of fashion therewith. And from that time forward, the story, with appropriate changes of name and locality, has been repeated again and again, as a new and fresh incident of unnumbered Sunday-school and other entertainments. It is not, indeed, very long ago since I was overwhelmed by a valued friend of mine with the information (which he had at second hand, of course), that this classical incident had just happened, with the utmost and most harrowing accuracy of detail, at an

\* *Book of the Table*.—Jeaffreson.

affair of the kind which had just taken place in Heywood, Lancashire.

Take another equally well-known anecdote, told of the great tragedian of the seventeenth century, Betterton, and the then Archbishop of Canterbury. His grace expressed to Betterton his astonishment that the representation of fables in stage plays should make more impression upon the minds of the people than that of truth in the sermons of the clergy ; to which Betterton rejoined, " May it please your grace, it is because the clergy, in reading their sermons, pronounce them as if they were reading fables, and we, in acting our parts, and using them in a proper gesture, represent them like matters of fact." This anecdote has since been told of many bishops and many actors, and will, no doubt, have to run the gauntlet of similar treatment for many years to come.

In all probability, this tendency to substitution of names and places is due in a measure to the inaccuracy of human memory. But it is none the less to be deplored, and one important result of it is, that there is a tendency for these anecdotes and stories to attach themselves to the wrong individual in such a way as to build up for him an entirely exaggerated and fictitious personality. Curran and Sydney Smith having been both witty men, witty stories of which they never heard became fathered upon them. There being well authenticated cases of Irishmen having perpetrated *bulls*, whenever a new bull is discovered it is speedily attributed to somebody of Hibernian extraction. Charles the Second being in the popular tradition the "merry monarch" of English history, becomes endowed with at least one anecdote of the humorous kind which distinctly belonged to an earlier period—the incident of knighting a loin of beef, and thereby creating it *Sir-loin*. It matters not that by an older tradition it was Henry the Eighth who achieved this

feat, nor yet that James the First also had the credit of it attributed to him. The voice of the majority, which is, we know, conclusive in all well-regulated countries, declares in favour of Charles the Second, and a distinguished painter actually gave the judgment of the majority the sanction of art upon the walls of the Royal Academy.

This tendency to corruption of the anecdote at once supplies us with a very important distinction in favour of the superior value of its cousin in rhyme. The true epigram defies time both in form and substance; the prose epigram of the anecdote variety passes through many transmigrations, although its spirit happily often remains unaltered, and builds up its wordy habitation again and again nearly on the original lines.

Making all allowance, however, for this inferior accuracy of anecdotes, they are still of immense value for biographical and historical purposes. When thoroughly authentic, we have in them the material by which the dry bones of the past can be clothed, in our imagination, in living form. It is, as we have already seen, of the nature of all epigrammatic form in literature to cling to the human memory as the burr clings to the fleece of a sheep, and thus it comes about that we really know the men of past times, and the people of the past, almost in proportion to the number and character of the anecdotes we possess with regard to them.

Take, for example, an individuality like that of Dr. Johnson. He died in 1784, over a hundred years ago, and yet we all have a far clearer picture of him in our minds than of any of his contemporaries, or of almost any of his successors. This is because in Boswell's *Life*, and from other sources, we have so many little anecdotes which hit off his traits of character by a species of literary photography.

And it is all the more fitting that we should refer briefly,

by way of illustration, to a few of these sketches of his personality, as we call to mind, not only that Johnson "loved anecdotes" himself, but that he was most scrupulously accurate with regard to them. It is on record that, in relating the most minute anecdote, he would not allow himself the smallest addition to embellish his story, but delivered it as if he were talking upon oath,\* and no one, therefore, could possibly be more deserving of that species of immortality which it is in the power of well-protected anecdotes to confer.

How clearly, then, for example, we have one of the secrets of the doctor's enormous erudition put before us in the following incident :—

Before dinner (says Boswell), Dr. Johnson seized upon Mr. Charles Sheridan's account of the late revolution in Sweden, and seemed to read it ravenously (this was in a room full of company, of which he was the bright particular star, be it remembered), as if he devoured it, which was to all appearance his method of studying. "He knows how to read better than anyone" (said Mrs. Knowles); "he gets at the substance of the book directly; he tears the heart out of it."

And then we have his style of conversation delightfully hit off in another passage :—

When I called upon Dr. Johnson next morning (says Boswell), I found him highly satisfied with his colloquial prowess of the preceding evening. "Well," said he, "we had good talk." Boswell—"Yes, sir, you tossed and gored several persons."

This being the conversational style of the illustrious lexicographer, it is not surprising to meet with the following further illustrations of his peculiar vein. A certain Mrs. Brooke wished to submit to him a tragedy of her composition, the subject of which was the Siege of Sinope, and, after pressing him some time upon the point, took occasion

\* Boswell's *Life*.

to mention that she had several other irons in the fire. "Why, then, Madam," he replied, "the best thing I can advise you to do is to put your tragedy along with your other irons." And again, another lady, for Johnson, though somewhat uncouth in his manners and dress, seems to have been much in favour with the fair sex, asked him whether he thought that those who knew each other on earth (including, of course, by implication, himself and his fair interlocutor) would meet in heaven? "Madam," he answered, "I have no wish to meet a fool anywhere." But, against all this positive rudeness, we are furnished with Goldsmith's dictum, preserved in still another anecdote:—

Johnson, to be sure (says Goldsmith), has a roughness in his manner, but no man alive has a more tender heart. He has nothing of the bear but his skin.

And then we get, in still another well-known passage, a very pleasing trait from the same side of his character, his fondness for animals which he had taken under his protection.

I never shall forget (says Boswell) the indulgence with which he treated "Hodge," his cat, for whom he himself used to go out and buy oysters, lest the servants, having that trouble, should take a dislike to the poor creature. . . . I recollect him one day rambling up Dr. Johnson's breast, apparently with much satisfaction, while my friend, smiling and half whistling, rubbed down his back and pulled him by the tail, and, when I observed he was a fine cat, saying, "Why, yes, sir, but I have had cats whom I liked better than this," and then, as if perceiving "Hodge" to be out of countenance, adding, "but he is a very fine cat—a very fine cat, indeed."

It was this inherent kindness of heart, more probably than his ability, that left the terrible doctor on good terms even with Lady Macleod after the following incident:—

It is related that, at Dunvegan, Lady Macleod, having

poured out for Dr. Johnson sixteen cups of tea, asked him if a small basin would not save him trouble and be more agreeable. "I wonder, madam," answered he roughly, "why all the ladies ask me such questions. It is to save yourselves, madam, not me." The lady was silent (!) and resumed her task.

I must not, however, be tempted, in pursuing these illustrations of the value of this particular sort of epigrammatic narrative, to say anything further about Dr. Johnson. But how much truth there is in Boswell's reflections upon this subject. "How delighted," he says, "should we have been, if thus introduced into the company of Shakespeare and Dryden, of whom we know scarcely anything but their admirable writings. What pleasure would it have given us to have known their petty habits, their characteristic manners, their modes of composition, and their genuine opinion of preceding writers and of their contemporaries. All these" (in the absence of anecdotes relating to them) "are now irrecoverably lost."

Let us take, again, in illustration of the value of personal anecdote, such knowledge as we possess of the greatest scientific genius England ever produced—Sir Isaac Newton. We really know very little indeed of this extraordinary man, except by means of a few striking anecdotes which have come down to us; and it is in these narratives only that, looking reverently back some two centuries, we get a fairly clear view of his individuality. I believe that the fall of the apple incident is without satisfactory evidence, but it is one to which no element of character distinctly attaches. The well-known story, however, of Newton's dog "Diamond," destroying by accident the result of long and laborious calculations, and of the calmness and fortitude of the philosopher in presence of a loss which, at his then time of life,

was irremediable, appears to be quite authentic. So also with the anecdote in which Newton describes himself in the memorable words:—"I do not know what I may appear to the world, but to myself I seem only like a boy playing on the seashore, and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary, whilst the great ocean of truth lay all undiscovered before me:"—than which there is no finer instance in the English language of the humility of transcendent genius. And we get a clear view of that immense power of mental concentration which he possessed, and the absence of attention to the ordinary requirements of physical existence resulting from its exercise, in the incident which has come down to us through Dr. Stukely, his intimate friend. Dr. Stukely, we are told, was one day shewn into Sir Isaac's dining room, where his dinner had been for some time served up. He waited for a considerable time, and, getting impatient, he removed the cover from a chicken, which he ate, replacing the bones under the cover. In a short time, Sir Isaac entered the room, and, after the usual compliments, sat down to his dinner, but, on taking off the cover, and seeing nothing but bones, he remarked, "How absent we philosophers are; I really thought that I had not dined."

Surely the dominion of mind over body could no further go, and for this side-light upon one of the greatest personalities of humanity we are indebted to the anecdote above referred to, and to two or three others of the same character.

And it must not be supposed that, in giving prominence to the value of authentic personal anecdotes, I wish to undervalue those to which no personal element attaches. There are great numbers of such, which light up odd corners of past history in the most valuable manner. I cannot venture, however, to launch my bark upon so wide a sea to-night, and

I will simply give you one or two of this class by way of extending a little further the range of our illustrations.

Perhaps as instructive as any are some of those which illustrate a fact we are all quite sensible of, though no one can quite see how to remedy it; and that is, the want of perfection in the administrative machinery of our country. I have no doubt that the same machinery in all other countries is at least equally inaccurate and defective, but that, of course, though it may be some consolation to our *amour propre*, does not help to solve an important practical problem.

Of this nature are the blunders into which our legislators fall by virtue of the process which is requisite to elaborate an Act of Parliament, and it is to this that the following anecdote relates :—

The Parish Registry Act of George III (56 George III, c. 146), provided that any person or persons wilfully making, or causing to be made, false returns in the books of baptism, burials, or marriages, being thereof lawfully convicted, shall be deemed and adjudged to be guilty of felony, and shall be transported for the term of fourteen years. This is all very well; but then the succeeding clause enacted that one-half of all fines or penalties to be levied in pursuance of this Act shall go to the person who shall inform or sue for the same, and the remainder of such fines as shall be imposed on any churchwarden shall go to the poor of the parish. As the only penalty so imposed was transportation for fourteen years, the inconvenience of dividing that penalty between the informer and the poor of the parish is obvious enough.

One other similar case of an equally absurd blunder, made in a court of justice, and narrated by Mr. Chitty, and I have done. It is of a judge, who was so entirely ignorant of insurance causes that, after having been occupied for six hours in trying an action on a policy of insurance upon

goods (Russian duck) from Russia, he complained in his address to the jury that no evidence had been given to show how Russian ducks (mistaking the cloth of that name for the bird) could be damaged by sea water, and to what extent !

But now we have had enough of these illustrations ; the field is obviously too large for any further extended exploration, and it is time to draw this paper to its necessary and inevitable conclusion.

And now, perhaps, you will be disposed to ask, in the words of an eminent mathematician who sat out a five act play, What does all this prove ? I take it, then, that the first and most important lesson we should keep before us in view of the later portion of our enquiry is, that we too, as a recent editor of Boswell's *Life of Johnson* has said, should try to win for ourselves, in regard to any anecdotes we may think fit to employ, a place in Johnson's school—a school distinguished, as Sir Joshua Reynolds said, for a love of truth and accuracy. But a still more general and more technical, though less lofty, conclusion we are entitled to draw from the whole range of the considerations which I have submitted to you is the importance of encouraging, so far as may be, the epigrammatic method in literature and discourse, and of protesting as we have opportunity against that looseness and diffuseness of style which is directly opposed to it. There can be no doubt that there is a real and a great danger, amongst all our general progress, of retrogression in this respect. Many of the great influences which are in our midst lead directly to that terrible Avernus of prolixity and dulness from which it is so difficult to rise unsaddened and unscathed. Thus a most meritorious and useful class of highly educated gentlemen, who have many discourses to deliver to those who are neither in a position to reply nor to protest, compose their discourses, as a rule, upon

the uniform method of expanding a sentence, or a narrative of a beautiful and epigrammatic character, into a half-hour sermon, in the style of the composition of which the original beauty of the text is conspicuously absent. The politicians, again, who utter those many columns of the daily newspapers with which we are oppressed, grope indeed carefully for an epigrammatic party cry, knowing well that it is the most potent aid they can summon to their assistance; but, in the great bulk of their speeches, they expand rather than condense their matter. No doubt editors and reporters palliate, as far as they can, these conditions of current literary life to their unhappy readers. They at least try to be epigrammatic where they can, and, thanks to the indirect influence of the telegraph, and its costliness, their contributors and news agencies effect much in the same direction. But the efforts of every friend of brevity and terseness are needed to the utmost. I appeal to the members of the Society to rally to their assistance; and, if I myself have erred to-night by violating my own canons in this important matter, let them follow the precept rather than the example, and attribute my own backsliding not so much to wilfulness as to that general demoralization of style in which many besides myself, contrary to their nobler instincts and better aspirations, are plunged.



# ON THE LIFE AND LETTERS OF CHARLES DARWIN.

By REV. H. H. HIGGINS, M.A.

VOL. I.

THE biography of Darwin affords a reasonable hope that, amongst the abundant and diversified materials therein contained, the key to his success may be found. Mr. Darwin himself thought so. He was at much pains to put on record his own habits and modes of thought, if they were at all likely to be of service to those who should follow him in the pursuit of truth.

Certain reminiscences he himself labelled "important." Two or three of these will be given from the *Autobiography*.

Dating from the Parallel Roads of Glen Roy, Mr. Darwin writes, p. 69—

"Because no other explanation was possible under the then state of our knowledge, I argued in favour of sea action, *i.e.*, by the elevation and withdrawal of the sea, and my error has been a good lesson to me never to trust in science to the principle of exclusion."

Hasty and over-confident observers are apt to conclude that they know all possible causes for an event, and have only to choose between them. If, then, three or four causes, or apparently all but one, will not fit, they are quite positive the remaining one must be the right cause—there is nothing else left for it, so say they. This is the principle of exclusion, to which Mr. Darwin had learned never to trust in science; and it is the principle on which a well-known writer has built up man's pedigree, step by step, for twenty-three stages, from an Amoeba to the human race.

*Autobiography*, p. 87—

I had also, during many years, followed a golden rule, namely, that whenever a published fact, a new observation or a thought, came across me, which was opposed to my general results, to make a memorandum of it without fail, for I had found by experience that such facts and thoughts were far more apt to escape from the memory than favourable ones.

Perhaps this practice of itself might be sufficient to distinguish Mr. Darwin from ordinary men. We are surprised that there are not more scientific men doing Darwin's kind of work, but how few are ready to give the amount of respectful attention which he did, when facts occur opposed to the "general results" of their thoughts!

In *Reminiscences*, his biographer writes, p. 148—

There was one quality of mind which seemed to be of special and extreme advantage in leading him to make discoveries. It was the power of never letting exceptions pass unnoticed.

In Mr Darwin's pursuit, biology, there is a strong tendency in exceptions to become excessively odious. We need not wonder that the naturalist who never blinked an exception was the one who took the lead in the pursuit after truth.

All these characteristics point to a man of iron determination, merciless to his own foibles. How strong in us are our scientific foibles, and how they beg and entreat to be spared! Few besides naturalists know how powerful is the *Στοργή* of a scientific writer for the hypothesis over which he has brooded. Darwin was the man to sacrifice all this, thus becoming the man whom Nature hath delighted to honour.

Some of us, and I for one, hold that Darwin's fame would have been dearly bought had it been reached through

the bondage of a heart of iron which knew no beat of tenderness nor anything of the throbbing of deep affection.

It was not so with Darwin. Kind-heartedness meanders, like a stream, through all his correspondence, and one brief word shall represent the feelings which dwelt in the home circle. *Reminiscences*, p. 134. The occasion was the death of his daughter, Annie—

We have lost the joy of the household and the solace of our old age. She must have known how we loved her. Oh, that she could now know how deeply, how tenderly, we do still love her dear joyous face. Blessings on her.

The last of my little notices on Vol. I shall be assigned to Darwin's great work on the Cirripedes, the only monograph he wrote; and to this he devoted eight years of his life.

It was the admirable character of this monograph, and the excellence of its descriptions, which enabled me in 1880 to identify the nameless contents of a large box of Cirripedes, bought by me in London for the Liverpool Museum, with Darwin's own work. They turned out to be the duplicates of the "Beagle" collection, made by Mr. Darwin's own hands. As a relic, they are the greatest treasure we have in the Museum, and still seem to say—At this lowly group of animals DARWIN worked for eight years.

## VOL. II.

A DISTINCTION of no ordinary kind was conferred on the proposed life of Darwin, when Professor Huxley undertook to write in it a chapter on the "Reception of the *Origin of Species*."

The Professor would probably assert that more honour was reflected than conferred by his part in commemorating

the life of one whom he ranks with Isaac Newton and Michael Faraday. But a large class of readers will find as much interest in observing the way in which the subject is now treated by Professor Huxley, as in learning the incidents of the struggle through which Darwinism became established.

No living man, more graphically than Huxley, could have described the tactics of the opposition, or enriched the narrative with more telling anecdotes; but whoever opens vol. ii, chap. v, with the hope and expectation of finding stores of fresh materials for a damaging case against Mr. Darwin's opponents, may perhaps be disappointed.

Professor Huxley does not withhold his condemnation of such as would not fight fairly; but neither does he exult in magnifying the unworthiness of the combatants who were overthrown. Later on, in the same volume, occurs an account of the conflict waged at the Oxford Meeting of the British Association in 1860, between Professor Huxley and the Bishop of Oxford, on which memorable occasion the writer was present.

The narrative does not appear to be at all overdrawn, but the writer is glad to believe that a similar passage at arms could not now occur, inasmuch as there is not a bishop on the bench who does not admit the necessity of treating the subject at least with grave respect.

A motto for this portion of the second volume of Darwin's life might read—Times are changed and we are changed with them. Thirty years ago evolution seemed to carry the black flag, bearing a death's head and crossbones. There is no longer any consistency in renouncing for evolution's sake all that chiefly makes man's life lovely and hopeful.

A deep impression is abroad, though somewhat silently entertained, that Christians and heathen, bishops and

philosophers, are all sailing on the same bottom; and, to carry on the metaphor, that the most valuable and reliable seamen are not those who are the loudest renouncers of all old treatises on navigation, but such as do their utmost to make whatever is good and true in the old, work-in with the new. The writer's recollections and printed papers enable him distinctly to recall the chief features of the Darwinian controversy from the year 1855, the date of his own first communication to this Society.

Not long after this, the Mechanicalists singled out for concentrated attack, the argument from design, or, as it is called, teleology.

The writer has all along felt that, although unable to support teleology on orthodox grounds, if design as the source of order in nature were lost, all that is most worth caring for in natural science would be lost along with it.

In some quarters the attack on teleology is as exterminating and as bitter as ever. It must be a source of great satisfaction to many that in such quarters Professor Huxley is not to be found.

I do not profess to be able, by quoting a few lines from Professor Huxley's pen, to do justice to his views on so great a subject; but the following words from vol. ii, p. 201, are a portion of Professor Huxley's quotation of his own words, written nearly twenty years ago:—

The doctrine of evolution is the most formidable opponent of all the commoner and coarser forms of teleology. But perhaps the most remarkable service to the philosophy of biology rendered by Mr. Darwin is the reconciliation of teleology and morphology, and the explanation of the facts of both which his views offer.

The teleology which supposes that the eye, such as we see it in man or one of the higher vertebrata, was made with the precise structure it exhibits for the purpose of enabling the animal which possesses it to see, has undoubtedly received its death blow.

Nevertheless, it is necessary to remember that there is a wider

teleology, which is not touched by the doctrine of evolution, but is actually based upon the fundamental proposition of evolution.

The value of these remarks is much increased by the date at which they were first written—in the very heyday of the controversy.

For teleology, to have any *raison d'être* at all, must imply a primordial source of order, and the warmest advocates of the argument from design—without assuming that Professor Huxley's views coincide fully with their own—could desire nothing better than the rejection of a teleology that is coarsely circumscribed and false, in favour of a wider teleology that is well-founded and consistent with the facts of nature.

### VOL. III.

THE correspondence in this volume is arranged in sections, relating to the works from time to time published by the distinguished author, subsequently to 1863.

From that date, scientific men in all parts of the world anticipated a new work from the pen of Mr. Darwin with something of the keen interest which, as I well remember, was associated with the appearance of a fresh novel in the Waverley series.

In many letters Mr. Darwin refers to Pangenesis, his theory respecting the reconstruction of lost limbs in certain animals, *e.g.*, the claw of a crab or a lobster; but in no case does he seem to be convinced by his opponents' arguments, founded, as they mainly were, upon the difficulty attending the conception of an hypothesis so extremely intricate and complicated.

It is, however, a very unsafe argument against a theory, that it is too wonderful to be true. No one has illustrated this fact more forcibly than Mr. Darwin. Let us suppose a

philosopher of the last century asking for an explanation of the flower of an orchid, and finding some one capable of leading him *seriatim* through all the marvels of its philogeny and development, and natural selection, and cross fertilization, every stage in which is essential to the full elucidation of the morphology of the flower.

Is it not probable that the philosopher, let his receptivity have been ever so well developed, would be unable to accept the true hypothesis? He would be wholly overwhelmed by the marvels crowding in upon him, and his only answer would be—"it is too wonderful to be true."

So far from having reduced the mystery of life, Darwin has filled the whole kingdom of life with wonders.

Some subjects appear to have fascinated Darwin more than others, perhaps none more so than that of insectivorous plants, vol. iii, p. 320 :—

I will not publish on *Drosera* till next year, for I am frightened and astounded at my results. I declare it is a certain fact that one organ is so sensitive to touch, that a weight seventy-eight times less than that, viz.,  $\frac{1}{78}$  of a grain, which will move the best chemical balance, suffices to cause a conspicuous movement. Is it not curious that a plant should be far more sensitive to the touch than any nerve in the human body?

Three years before his death, Mr. Darwin added to his *Autobiography* the following lines in his own hand—

As for myself, I believe that I have acted rightly in steadily following and devoting my life to science. I feel no remorse from having committed any great sin, but have often and often regretted that I have not done more direct good to my fellow creatures.

Mr. Darwin died April 19th, 1882.

Within the few years which have elapsed since the most honoured of our sacred shrines received the remains of the author of *The Origin of Species*, a change has been hastening

on which must, sooner or later, deeply affect the sanctions of religious life in every nation under heaven.

The historian who, a hundred years hence, shall write of the present movement may probably see more clearly than we do ourselves a coincidence of various proximate sources. Colenso, Max Muller, Matthew Arnold, and Darwin, each has his share, whilst thousands of the very wisest and best of men, profoundly convinced that mere science cannot of itself constitute a religion of the heart, are filled with love and veneration for the old paths, and are grateful for the results that from age to age have arisen from the ancient faiths. Such men follow with redoubled zeal the courses in which they have been brought up, yet not without a deep sense of disquietude.

This is a generation of unsparing religious efforts in many directions. Can it be true that every way seems to be zealously tried, except one? viz., a competent investigation into what it is, concerning faith and hope, that a perfectly united nature really teaches.

*That* enquiry is left to be answered in accordance with the tenets of an age when "Unity in Nature" was not known, or even thought of.

A time will be when, perhaps, the younger of us may see more fully than any of us do now the fitness of Darwin's testamentary summing up of his life—

"As for myself, I believe that I have acted rightly in steadily following and devoting my life to science."

## THE CELTIC RELIGIOUS COLLEGE AT BANGOR ON THE DEE.

(ABSTRACT.)

By WILLOUGHBY GARDNER.

ABOUT thirteen miles south from Chester, on the right bank of the river Dee, lies the picturesque little village of Bangor-is-coed.

To the casual visitor, there is nothing whatever about the appearance of this place to suggest that it has any ancient history; no stately ruins here point to ages of former greatness, nor are there any buildings older than sundry half-timbered houses near the river, or the church, dating partly from the fourteenth century.

Yet Bangor-is-coed is a place of note in the annals of our country. In very early and dark ages it was intimately associated with our great Christian religion; then in its infancy in Britain, and it gradually became more and more important till, at the close of the sixth century, it was the site of a vast religious college, containing over 2,000 teachers and scholars, endowed by kings of the surrounding country, and boasting of royal princes among its inmates. Here was collected all the greatest learning of our ancient British forefathers, and early in the seventh century, this college furnished the body of venerable religious men who fought the long and wordy battles between the old Celtic Church of these islands and the emissaries of the Roman Church, then first sent over to this country. Such was the religious fervour of those early days of Christianity, that on this spot, for many years, prayer and praise to Almighty God was kept

up day and night continually by over a hundred devout men at a time! This place also was a centre of Christian missionary enterprise in our country in that far off age; the college situated here trained and produced hosts of ardent and saintly men, who went forth to carry their religion with them to far distant parts; the names of many of these men have come down through twelve long centuries to us at places where they founded churches, which still perpetuate their holy memories. Last of all, with the name of this village is associated the remembrance of a fearful and sanguinary massacre, wherein nearly 1,200 devout men, at that moment engaged in prayer, were slaughtered in cold blood by a fierce and vindictive Saxon king, who afterwards destroyed their celebrated college, and scattered all its stores of ancient learning to the winds; so effectually did he put an end to its memorable career, that verily it has come to be true in this case that "the site thereof knoweth it no more!"

The present name of the village, Bangor-is-coed, still points to its early connection with religion and learning, meaning, as it does, "great congregation, or college, below the wood." The term Bangor, was the common Celtic appellation for the religious establishments extant in those days in various parts of the country; it occurs frequently in Wales, and two or three times in Ireland.

The history of the college of Bangor-is-coed is involved in considerable obscurity; this may easily be surmised when we remember that it met with its sudden destruction at the commencement of the seventh century. Many and various accounts of the origin of the religious community here have been given by different authors. The learned antiquary Bale, writing early in the sixteenth century, ascribes its foundation to the Christian King Lucius, who is said to have lived at the end of the second century. Cressy, 180 years

later than Bale, quotes the latter authoritatively upon the point, adding that the inauguration of the college by Lucius "can be proved from other ancient records." The same view was shared also by Bishop Ussher, the great ecclesiastical antiquary of the seventeenth century. Modern historians, however, are inclined to throw doubt upon the existence of Christianity at all in these islands before the commencement of the third century, so that very little reliance can be placed upon this account of the foundation of Bangor.

At the time when the Romans commenced to leave Britain, however, early in the fifth century, we find that the Celtic Christian Church had become very important in the land, so much so, that heresies and schisms had managed to creep in, which were leading the people away from their original faith. To counteract one of these heresies, called Pelagianism, the Church of Gaul sent over to Britain several learned men, who went about the country preaching against it. One of these preachers was a man named Germanus, who met with a good reception at the hands of the Britons, and laboured long among them.

When the Roman legions were finally withdrawn, A.D. 426, the Britons were very sadly harrassed by the Picts and Scots from the north of the island, and afterwards by the Saxon pirates, who swarmed down upon them from the Continent. Left unprotected by the strong military power which had defended them for so long, they found themselves quite unable to stand against these warlike hosts of invaders; they gradually retreated, therefore, from the plains of the south and east to the mountainous regions of the north and west. It was in the west then, in Devon and Cornwall and Wales, that Germanus chiefly laboured, converting some Britons who were still heathen to Christianity, and establishing the majority, who were already Christian, in sound doctrine. It was there also that he strongly advised the Britons

to form schools or colleges, where the Christian religion would be fostered and preserved in those troublous times. This they did, and on a second visit to Wales, after returning to Gaul, Germanus brought with him several ardent disciples, whom he placed in charge of the different schools which he had himself initiated. Among these men may be mentioned Illutus, whom he placed over the college which he founded at Llantwit Major, in Glamorganshire, and Cadvan, who originated the great establishment called Bangor Cadvan, on Bardsey Island.

Now various writers have affirmed that Germanus, among other establishments of the kind, also founded the college at Bangor-is-coed. This was about the middle of the fifth century, and though we have no actual early records to prove the statement, it is for many reasons exceedingly probable that he did so. In confirmation of this it may be mentioned that, in the old Welsh *Genealogies of the Saints*, a certain St. Cybi, who is known to have been a student at Bangor-is-coed, is described as "from the college of St. Germanus." That Germanus twice visited this particular district is well authenticated.

From the time of the probable foundation of the college, therefore, by Germanus, about the middle of the fifth century, we have to pass over a period of some years before further light is thrown upon the subject.

At the beginning of the sixth century, a king named Cadell was lord of the country then known as Deyrnllwg, and since as Powisland and Vale Royal. The book called the *History of Nennius*, written early in the seventh century, gives a somewhat romantic account of the conversion of a namesake and probable ancestor of this king to Christianity by Germanus, while the latter was in Denbighshire. The kingly race of Cadell being thus Christian, and having a very distinct connection with Germanus, to whom

they in a measure owed their kingdom, we are not surprised to find that they took a royal interest in the college which he had in all probability originated ; accordingly, we read in old Welsh MSS. that "the family of Cadell endowed the college of Bangor Vawr in Maelor," or Bangor-is-coed. The king Cadell who lived in the early part of the sixth century, was succeeded by his son Cyngen, who also gave lands and property to Bangor on the Dee. During his reign, a certain king, called Pabo-post-Prydain, was driven from his territories in North Britain by the ever-harrassing Picts and Scots, and sought refuge with Cyngen. The latter entertained him hospitably, and, finally, gave him grants of land in his dominions. In his last days, Pabo retired to the island of Anglesey, where he devoted himself to a religious life, founded a church, which is still called after him, and died. This Pabo had three sons, Dunawd, Sawyl and Carwyd, to all of whom reference will be made later, and one daughter, Arddun. He appears to have ingratiated himself pretty well at the court of his host and protector, King Cyngen, for we find that he not only obtained from him the grants of land mentioned above, but succeeded in marrying his daughter to Cyngen's son Brochmail, who afterwards became king, and figured conspicuously in the history of Bangor-is-coed. Pabo seems to have left his three sons behind him, fighting for his dominions in the north, but he probably brought his youthful grandsons, Deiniol, Cynwyl, and Gwarthen, sons of Dunawd, with him into Wales. Here he dedicated them also to a religious life, for we find them mentioned as students in the college of Cattwg, at Llanearvan, in Glamorganshire ; they evidently acquitted themselves with distinction while there, for Cattwg sent them to be teachers in the college of Bangor on the Dee, where they eventually were promoted to be principals, and it was "by their wisdom and piety," it is said, "that this

place became the most eminent of all the Bangors of Britain."

Thus we see that Bangor-is-coed had by this time, *i.e.*, about the middle of the sixth century, become the most celebrated of all the great religious establishments of the country, and we are prepared for the important place in history which it was shortly to fill.

Meanwhile, the three sons of Pabo were fighting with their various enemies in the north. Dunawd succeeded nominally to the dominions of his father for a short time; he is described in the *Triads* as one of the "three pillars of battle," and is mentioned by a contemporary bard as fighting with the sons of Urien, about A.D. 565. Sawyl, the second son, is also alluded to as a fierce warrior in the *Triads*. At last, however, notwithstanding their mighty prowess in war, they were finally driven from their father's kingdom. Meeting thus with worldly reverses, the brothers gave up fighting for good, and joined the great religious community at Bangor-is-coed, in Pabo's adopted country. Settled finally here, King Dunawd, as he continued to be called till the day of his death, appears to have given all the lands of which he was then possessed to the college, and henceforth to have devoted his ardent energy, which he had hitherto expended on war, to the service of religion. Some years later we find him, probably at an advanced age, promoted to be Principal or Abbot of Bangor-is-coed, which had by this time grown to huge proportions, celebrated, as we have seen, as the most eminent of all the Bangors, endowed with lands on several occasions by kings and princes, and now numbering among its inmates members of a royal house. To such a size had the establishment grown, that the Venerable Bede, writing about A.D. 690, says: "The number of the monks of Bangor was so great that the monastery was divided into seven parts, with a ruler over each, and none of these parts contained less

than 800 men"—which represents a total of 2,100 inmates! Almost incredible as these numbers recorded by the Saxon historian may at first appear to us, they are fully confirmed by a Welsh account of Bangor-is-coed. Similar huge establishments in South Britain are alluded to in the *Triads*, and we have also authentic records of even a larger community of the kind at one time in Ireland. From being at first simply a religious school or college, Bangor-is-coed about this period became more or less of a monastic establishment, with stricter rules, and as such we find it described by the writers who have preserved to us the later portions of its history.

Having attained to such high eminence, Bangor naturally became the nursery of many men who were notable in their time. Of several of these, records have come down to us, and we will review the most prominent.

Deiniol, the son of Dunawd, of whom we have heard above, soon sought fresh fields for his untiring energy outside Bangor-is-coed. After working there for some time, he set himself to establish a branch college at Bangor in Carnarvonshire, which was called Bangor Deiniol, and had a long-lived reputation. Very soon after this, he also founded the ecclesiastical see of Bangor, of which he was consecrated the first bishop by Dubritius, about A.D. 560. He died A.D. 584, and was buried at Bardsey Island. Besides the first cathedral at Bangor in Carnarvonshire, he also founded churches at Hawarden, at Llanwchllyn, at Worthenbury, and at Monkton, all of which bear his name.

The missionary zeal shewn by Deiniol was imitated by many other inmates of Bangor-is-coed, who went forth one by one and established Christian churches in various parts of the country. Cynwyl, Deiniol's brother, founded a church in Cardiganshire, at Aberporth, and two in Carmarthenshire, at the villages of Cynwyl Gaio and Cynwyl Elfod. Sawyl,

brother of *Dunawd*, the former fierce warrior of whom we have heard above, also founded a church in *Carmarthenshire*, still called *Llan-sawel*. *Sawyl* had a son named *Asaf*, who afterwards, as *St. Asaph*, became famous as the disciple of *St. Kentigern*; about A.D. 560, he was made first bishop of the ecclesiastical see in North Wales which has ever since borne his name. *Cybi*, a scholar at *Bangor-is-coed*, followed the example of *Deiniol* by founding a branch college at *Holyhead*; the church here is still called after him; he also established churches at *Llangybi*, near *Criccieth*, and at the village of the same name in *Cardiganshire*. The little church on the *Orme's Head*, so well known to all visitors to *Llandudno*, was founded by a holy man named *Tudno*; he and his four brothers were "Saints," as the Welsh MSS. call them, of *Bangor-is-coed*; they went there, after the territories of their father, *Saithenyn*, situated in *Cardigan Bay*, were overwhelmed by the sea, some time in the sixth century. Probably at about the same date, the sea also flooded the lands of a chief named *Helig*, in *Beaumaris Bay*, on the spot where the *Lavan Sands*, the "sands of wailing," still tell the tale of the catastrophe. *Helig's* twelve sons, meeting thus with worldly misfortunes, betook themselves to a religious life at *Bangor-is-coed*, where some of them afterwards became distinguished in missionary enterprise;—*Rwchwyn* founded the church called after him near *Llanrwst*, and *Celynin* the church at *Llangelynin*, near *Barmouth*; one of them, named *Brothen*, returned to the land of his birth, and built the first church at *Aber*.

We may here mention three great names which have been associated by many writers with *Bangor* on the *Dee*, viz., *Pelagius*, the arch-heretic, as he was called, and *Gildas* and *Nennius*, the historians. A careful examination of existing records referring to each, however, reveals the fact that *Nennius* alone of the three had any real connection with

the place. It may here be noted, that the Nennius whose life has come down to us with the Prologues attached to some of the MSS. of the *History* was not the author of the latter, but a person of the same name, living at a later date.

While Christianity was thus so flourishing in the west of Britain, it had been gradually exterminated in other parts of the country, where heathenism, brought over by the new English invaders, again reigned supreme.

In A.D. 597, the great Pope Gregory sent a little band of devout men, under St. Augustine, to preach the Gospel of Christ to the Pagan English. The story of the Roman mission is well known, as also is that of the celebrated conferences which took place between St. Augustine and his followers and the Welsh Christians.

It was to the last of these memorable meetings, A.D. 603, that all the learned men of the ancient British Church came in a great company. There were seven bishops from the seven Welsh sees, and a long train of eminent divines from the college of Bangor-is-coed, headed by the aged Dunawd, son of Pabo, their principal or abbot. At the conference, a long and fierce battle of words took place, of which two somewhat different accounts have come down to us from Saxon and Celtic points of view. No agreement, however, upon the questions at issue could be come to, and the meeting broke up, alas! wrathfully and hurriedly. Whoever may have been in the wrong, our great historian, Mr. Green, very justly remarks that this event is "memorable as the opening of the breach between the Celtic and Roman Churches, which was afterwards fought out so fiercely in many lands."

But at the very moment when the far-famed college at Bangor-is-coed was playing such an important part in history, the sound of an impending doom was gathering

in the air. For some time after the Saxon nations had established themselves over at least two-thirds of England, the territories of the Britons still extended in an unbroken line along the western side of the island, from the river Clyde, in the north, to the English Channel, in the south. By their great victory at Deorham, A.D. 577, the Saxons had effectually cut off the Britons of Devon and Cornwall from those of Wales. Cumbria, however, was still joined to Wales, and the city of Chester formed the link between the two. Against this important post therefore, Æthelfrith, the English king of Northumbria at that time, with a view of still further breaking up the power of the Britons, directed his conquering armies.

At the news of the danger to Chester, the British petty kings and chieftains united their forces in a common cause, and marched to the rescue from all parts. So great was the excitement and enthusiasm created by the coming conflict that 1,200 monks from Bangor-is-coed, after a three days' fast, proceeded to the field of battle to pray for the success of their countrymen against the invading heathen armies. The place where the conflicting hosts met has been called the "Orchard of Bangor" by British writers, and was probably somewhere between Bangor-is-coed and Chester. Here the 1,200 holy men, chanting their solemn anthem, arrived in a long procession. They stationed themselves apart from the rest, at a safe distance, as they thought; Brochmail, king of Powis and Vale Royal, who, as we have seen, was very intimately connected with the college and its inmates, was appointed, with a portion of the British forces, to protect them. King Æthelfrith soon noticed the wild gestures of the strange company standing there, praying, with arms outstretched to heaven, and asked "Who those men were?" Being informed of the reason of their coming, he said, "Though they have no weapons, if they cry to their

God, they do truly fight against us with their imprecations ;” and knowing that the battle would be the more fierce for their sakes, he ordered his men to attack them first of all. Then an awful and terrible scene began ; Brochmail appears to have fled, and the unhappy Christian flock was slaughtered in cold blood by the barbarous Saxon wolves of war ; of the 1,200 who went forth that morning, only fifty are said to have escaped !

The massacre of the monks was followed, after a long and sanguinary struggle, by the total and entire defeat of the assembled British forces, and Chester, with the whole of the district round it, thus fell into the hands of King Æthelfrith. This disastrous event took place A.D. 607, or, according to some authorities, A.D. 612 or 618. The fall of Chester into the hands of the Pagan conquerors naturally involved the final destruction of the great Christian college at Bangor-is-coed, and the dispersion of its few remaining inmates. These survivors fled to Bangor Cadvan, on the bleak and lonely island of Bardsey, which, we read in old Welsh MSS., they helped to make the most celebrated for learning of all the then existing colleges in North Wales, so that it “enjoyed gifts from kings and nobles more than any other.”

Thus ends, suddenly and tragically, the history, such as we know it, of the great religious establishment at Bangor on the Dee.

Having briefly traced its story, we may now endeavour to picture to ourselves the kind of place that Bangor-is-coed was in those far-off days.

The early Celtic religious colleges were very primitive affairs indeed, so far as general appearances go. With the name of a great monastery, we are apt to conjure up visions of a vast range of stately buildings—refectories, dormitories, chapter rooms, cloisters, etc., with a richly decorated church

of noble proportions towering over the whole. No such erections, however, existed at any time at Bangor-is-coed.

The college, or monastery, was most likely a large village of rude wattled huts. These were disposed in seven clusters or squares, forming several schools, or "chancels," as they were called, with a ruler over each. In the centre of the village stood the church, a large structure, built chiefly of wood; stone churches were, at this date, practically unknown in the country. The whole place was probably protected by an encircling wall of earth, or perhaps earth and stone, such as may still be seen on some similar foundations in Ireland.

This somewhat rustic-looking village, then, was inhabited by a colony of about 2,000 inmates, as we have seen above. These men were divided into three classes:—First, those of older years, who were devoted to the services of religion, to reading and study, and to the transcribing of the Scriptures; in this class were many great and learned men at Bangor, as Bede tells us; this is also illustrated by the prominent part which the monks of Bangor took in the great conference between the Celtic and Roman Churches; and again, by the number of earnest missionaries who, as we have seen, went forth to found other colleges and churches in the land. Second, the working brethren, those who were strong and fit to labour, and who, perhaps, did not show much aptitude for learning and study; they occupied themselves in the general daily work connected with the establishment, in agricultural pursuits, etc.; for, as is recorded again by Bede, the monks of Bangor "lived by the labour of their own hands." Third, there was a class of youthful members, who were under a course of religious and general instruction, to fit them for the offices of the church, or sometimes for other stations in life. Gildas, writing in the middle of the sixth century, gives us a graphic picture of the British monks and

clergy of his day; in their ranks there seems to have been a strange medley of indolence, pride, profligacy, and drunkenness, side by side with the greatest asceticism, self-devotion, and saintliness. The inmates of these religious establishments were, outwardly at any rate, much in earnest in their religious calling; for the Welsh *Triads* record that in the various great Bangors in Wales a hundred men, changed every hour, were always occupied in the service of God in the churches, so that prayer and praise were kept up there day and night without ceasing. At the same time literature, science, and the arts, were pursued with great ardour, and were thus preserved in the country when those outside the sacred pale were engaged in little else but strife and bloodshed from year's end to year's end.

Now of this celebrated and vast establishment, what remains upon the spot at the present day to tell the tale? After its destruction, A.D. 607, there is no mention of Bangor-is-coed for over five hundred years, when William, a monk of Malmesbury, writing in the reign of King Stephen, says, that in his day there remained there "such ruined churches, so many broken down porticoes, and such an accumulation of rubbish, as was scarcely to be seen elsewhere." He was no doubt quite correct in his description of the great "accumulation of rubbish" there, but he probably supplied the graphic details of the "ruined churches" and "broken down porticoes" from his own imagination, as it is unlikely that he ever visited the spot himself;—the ruins of only wooden edifices would hardly have remained standing for so long.

Four hundred years after this again, Leland was commissioned by King Henry VIII "to perambulate England" for the purpose of collecting together and preserving matters of historical and antiquarian interest, and in the course of his travels he came to Bangor-is-coed. Here he reports "it is

ploughed ground now where the abbey," as he calls it, "once stood, and they plough up bones of the monks, and in remembrance were digged up pieces of their clothes in sepulchres." He mentions also that "there remaineth the name of a gate of the monastery on the north, called Porth Hogan, and another on the south, called Porth Clays."

The site of the great college, or monastery, was in all probability on the flat meadows, on the western side of the present village. It would lie between the higher grounds to the north and to the south, where the farm-houses, still called Porth-y-gan and Cloi, possibly mark the extreme boundaries or gates in either direction. The river Dee appears to have altered its course here at some distant period, and most probably in those days ran under the steep bank to the north of the low meadows, instead of right through them, as it does now. It would then form a natural boundary to the site, and the gate, Porth Hogan, would be on its bank. Leland says that the place was "of the cumpace of a walled town," of the "space of a good Welch mile" in diameter. This extensive ground plan is borne out by the recorded number of the inmates, and it also just covers the distance between the two gates.

At the present day, however, over twelve and a half centuries since the destruction of the college, but little beyond a vague tradition among the natives of the district remains to mark the spot. The village church, standing no doubt upon an old foundation, is dedicated to St. Dinoth, the Dunawd, son of Pabo, of our history; and a chapel at Worthenbury, two miles away, preserves the memory of Deiniol, his son. A field just across the river, near the bridge, is still known as "Saint's Well Meadow." About A.D. 1775, there was a field here called "Cae Cymmin," or the "Communion Field," but the name is not to be found now. Also in an old survey of the district, made A.D. 1610,

a field is described as "Cae Fynnon Deiniol," or the Field of Daniel's Well, evidently a relic of the great Deiniol, son of Dunawd. The two farm houses, called respectively Porth-y-gan and Cloi, possibly marking the position of the ancient gates or entrances, may still be seen. An old Welsh melody, known as "Ymdaith-y-Mwnc," or the "Monks' March," is traditionally said to be the air chanted by the 1,200 monks on the ill-fated morning of their massacre. This is all we can say; none of the various so-called relics which have been turned up about the village of recent years, are apparently of any greater antiquity than the middle ages.

Such, then, as far as it has been possible to trace it from the most reliable and ancient records generally accessible, is the strange, eventful, if not even great, history of this quiet and peaceful-looking little village on the banks of the sylvan Dee.

Oh, Bangor! o'er thy murder wail!  
Now no ruins tell thy tale;  
On thy shrine no tapers burn,  
Never shall thy priests return!  
The pilgrim sighs and sings for thee,  
O miserere Domine!



## MATTHEW ARNOLD.

By EDWARD R. RUSSELL.

I AM to read a few lines to-night in honour of the writer of two or three volumes of curious and beautiful poetry, and of several volumes of criticism and religious disquisition, in which the following words, phrases, or sayings are used and reiterated:—Sweetness and light; sweet reasonableness; lucidity; poetry the criticism of life; criticism, a disinterested endeavour to learn and propagate the best that has been known and thought in the world; provinciality; totality; culture; anarchy; “all depends on the subject”; sound subject matter; high seriousness; seeing life steadily and seeing it whole; interesting (by reason of) distinction, beauty and elevation; eccentricity and arbitrariness (as faults of literature); fantastic; wanting in sanity; the need of expression, the need of manners, the need of interest, the need of beauty, the need of conduct; conduct three parts of life; an upper class materialised, a middle class vulgarised, a lower class brutalised; the young lions of the *Daily Telegraph*; lubricity; the Barbarians, the Philistines and the Populace; middle-class Macaulayese; Oxford, “the home of lost causes, and forsaken beliefs, and unpopular names, and impossible loyalties”; “miracles do not happen”; “the stream of tendency, not ourselves, that makes for righteousness”; “morality tinged with emotion”; the method, the secret, the temper of Jesus; “the Kingdom of God, the ideal society of the future.”

We are not now to appraise the value of these sayings. Controversy upon them, even within narrow limits, would require many hours and, indeed, many nights of close dis-

cussion. That one single writer's persuasive repetition has fixed them firmly in the mind of a generation such as ours is proof that, in some way or other, they met its needs or cravings. Their range is proof of the great variety of Matthew Arnold's thought. They have been recalled abundantly since his death. Those who find some of them already common-place may nevertheless acknowledge that they had value when first used. But, in fact, almost all of them that ever had value possess value still. Some are destined, even as mere phrases, to leaven English opinion and action for many years to come. It will be interesting a quarter of a century hence to enquire what is the then continuing worth, or what has been the operative result, of these familiar household words.

The best of them is that, besides being lucid, they are lucid from so many points. A critic of life and literature and manners can do little if he tries to physic mankind with one bolus. One of the articles lately written on Matthew Arnold remarked that, while Carlyle said that whatever was right was beautiful, Arnold said that nothing that was not beautiful could be right, and that his, accordingly, was a "propaganda of grace." One has only to hear an epigrammatic and delusive generalisation such as this to understand how much a phrase-maker profits by making a great many, so that he can set one against another, and count upon each telling some part of the whole truth, which cannot possibly be compressed into any axiom, however would-be comprehensive.

Taken altogether, the sayings of Matthew Arnold which have passed into common talk—and the commonness of much of the talk into which they have passed is the most wonderful element in the transaction—will pass into history likewise, and will bear fruit in history, until they cease to be necessary.

Besides the need there was for these sayings, and the effect of their being repeated a hundred times, with little change except of immediate application, their extraordinary vogue has been a good deal owing to Matthew Arnold's style. Some might be tempted to say that he had none; and, in the old sense, style he had none. He might have been a greater author if he had been less colloquial. But no one who justly estimates what he has written would wish that he had been a greater author. Occasionally, passages of eloquence shew that he might have done anything in prose. He preferred to converse, and all who love his writing are glad that that was his choice.

He was the most delightful, and sincerely the humblest, of egotists. Even the most delightful and least conceited of egotists must lay themselves open to personal satire. But Matthew Arnold had the rare gift of being able to continue for years, on very personal lines, discussions of the highest themes, without either losing his own temper or provoking extreme irascibility in others. He had not always quite so much to say as he thought he had, and he could not say nothing with any degree of effect or power; but what he had to say came from him in very bright and pleasant ambling talk, the stings of which were not apparent till you were stung, and then did not rankle.

As in his use of phrases, so with illustrations: he would often rather recur to an old one than find a new one, but there was always something to freshen it; and so some of his familiar examples of Philistinism or of excellence became vivid facts in many a consciousness that could not have apprehended any abstract blame or praise even with the help of the aptest casual illustration. It was his function to reflect and rebuke, as I have said elsewhere, the deficient civilisation of our time, and also I may add its deficient spirituality; and he did this with as much ease of manner—

though it was a great and will prove a memorable work—as if he had been throwing off mere letters to a friend.

Most writers of the present day have had to speak plainly of Matthew Arnold's faults, for in the working mechanism of literature the humblest must often take the highest to task. It fell to my lot once, and I then expressed regret at the "too unintermittent infusion of personal or egoistic allusions;" at the lack of rhetorical energy and climax; at "the curious absence of strong flow in the ripples of his pellucidity;" at his "resigned sequesterment from the broad channels of life and action;" at the too negative quality of his lucidity; at the something in him which seemed finnickin. Most of these are true counts of a good indictment. But we all feel strongly now that we would not have had Matthew Arnold other than he was. Let us realise, though, that his personal and easy method was answerable for much more than mere manner. The same unconventional *naïveté* which gave its charm of egoistic attraction to Matthew Arnold made him exalt certain somewhat obscure luminaries whom he had discovered to higher positions than their general brilliancy could have suggested, and to these he harked back as constantly as to himself. No other cultivation or use of his high qualities and fine ideas, however, or of those of others, could have done the English world so much good.

Especially unquestionable, and much less likely to be challenged than his prose style, was his poetry. The most contradictory things are said of it, and with partial truth. It is sometimes musical and sometimes not, and consequently one writer speaks of Matthew Arnold's faultless ear, and another suggests that Matthew Arnold was much hampered as a poet by having no musical ear at all. What his poetry always has is a perfect sympathy with all the serious

feelings of highly educated people who have retained the susceptibility of their emotions. What you rarely find in it is a plain and joyful, or plain and sorrowful, treatment of a simple human theme. A friend whose taste would lead him to make this his main criterion of poetry has remarked to me, that in all Arnold's poems there is only one that gives him a sense of high satisfaction. It is the "Requiescat"—

Strew on her roses, roses  
And never a spray of yew !  
In quiet she reposes ;  
Ah ! would that I did too.

Her mirth the world required ;  
She bathed it in smiles of glee.  
But her heart was tired, tired  
And now they let her be.

Her life was turning, turning  
In mazes of heat and sound ;  
But for peace her soul was yearning,  
And now peace laps her round.

Her cabin'd, ample spirit,  
It flutter'd and fail'd for breath ;  
To-night it doth inherit  
The vasty hall of death.

What pleases my friend in these delightful lines is probably the absence of problem, and this is very rare in Matthew Arnold's verse. Scarcely ever is it found, indeed, when the tone is mournful, and, although there are many lightsome stanzas, they are usually followed, and in my friend's opinion, spoilt, by others which lapse into Arnold's anxious vein. To a large extent judgment by such a standard is a matter of individual taste. There is abundant proof that in the Greek atmosphere Matthew Arnold could be truly, if not unaffectedly, gay. If he could not be as

light-hearted in a modern atmosphere, but in that atmosphere was unquestionably more sincere, and (in the general opinion) more successful, it is one among many evidences that he was not so Hellenic as it is a cant to call him. I am bound to say that, taking him all in all, and recognising the balance of his nature, a less Hellenic mind than his is scarcely to be found among those who have possessed the literary qualification for Hellenism. If Matthew Arnold has a final natural bias it is Hebraic; but in truth he is best represented by his own remarkable description of Rachel, the actress :—

Ah ! not the radiant spirit of Greece alone  
 She had—one power, which made her breast its home !  
 In her, like us, there clashed contending powers,

Germany, France, Christ, Moses, Athens, Rome.  
 The strife, the mixture in her soul, are ours ;  
 Her genius and her glory are her own.

So far as simple and unsubtle beauty are concerned, it must be admitted that, besides illustrating it in "Requiescat," and in many separate stanzas, Arnold has made a most explicit confession that this quality is indispensable. In "Heine's Grave," he says :—

Charm is the glory which makes  
 Song of the Poet divine ;  
 Love is the fountain of charm !  
 How without charm wilt thou draw,  
 Poet ! the world to thy way ?  
 Not by the lightnings of wit !  
 Not by the thunder of scorn !  
 These to the world, too, are given ;  
 Wit it possesses, and scorn—  
 Charm is the poet's alone.

It is curious that he does not here ban along with wit

and scorn that meditative subjectivity, harried and fretted and moved almost to tears by the Time-spirit, which is the most peculiar feature of his own poetry. The puzzles and the pensiveness of his age overwhelmed him in poetry as in religion. In his own words :

There is some root of suffering in himself,  
Some secret and unfollow'd vein of woe.

But the same root and vein ramify through the whole higher intellect of our time. Tennyson and Browning testify to it as well as Arnold. It is a root of suffering and vein of woe as far removed from the morbid moodiness of "Childe Harold" as from the rakish recklessness of "Don Juan," or the primrose shallowness of "Peter Bell." It so profoundly permeates the poetic expression of our day that we almost feel anything jocund to be acting; and simple pathos has almost come to seem maudlin, unless effected in swift, impressionist touches.

If we say of the best of Matthew Arnold's verse that it reflects the intellectual melancholy of his time with as much "charm" as the subject of that melancholy permits, we shall pass a just judgment on it, and place him in this department distinctly above Browning as a poet, though Browning must ever stand first as an analyst; and when we remember his own dictum that "Love is the fountain of charm," we shall agree that a period essentially of religious transition could not be more perfectly or tenderly mirrored than in the following never-to-be-forgotten lines which conclude "Dover Beach":—

Ah, love, let us be true  
To one another! for the world, which seems  
To lie before us like a land of dreams,  
So various, so beautiful, so new,  
Hath really neither joy, nor love, nor light,  
Nor certitude, nor peace, nor help for pain;

And we are here as on a darkling plain,  
Swept with confused alarms of struggle and fight,  
Where ignorant armies clash by night!

Many must have remembered this touching appeal when reading of late the story of Robert Elsmere, which has afflicted and oppressed English homes this spring as if it had been a tragedy of real life. Alas! literature may be some sort of substitute for domestic joy, but it would seem that in dogmatic England we are yet far from the time when under any severe strain of spiritual distress this Gilead of books and song will yield a balm that can be enjoyed in common by any two linked souls whose religious yearnings are out of sympathy.

When "Literature and Dogma" appeared, a very remarkable man, since dead, full of wisdom and affection, a Nestor to many, wrote to a friend, "I have got a religion that will just suit you." Looking back, it is curious to consider what must have been the reception of the book by men either in search of or ready to entertain a new religion. It was blemished by one gross blot of seeming irreverence, which was afterwards erased. When the book came to be really apprehended, its effect must have been to deepen, even in the minds of those who resisted or were insensible to its disintegrating operation on dogmatic belief or *aberglaube*, a sense of the intrinsic spiritual meaning and value of the things they most earnestly believed. This must be an abiding blessing to the world, because it is morally and emotionally beneficial alike to those who believe and to those who reject the orthodox interpretation of the Bible.

Matthew Arnold's "better interpretation," as he called it, was, and still is, unacceptable alike to those who think they can answer disintegrating literary criticism on Revelation ;

to those who hold that Revelation (by which they generally mean promiscuously picked out texts from the Authorised Version) is superior to criticism; to those who mystically insist that Max Müller ought to regard the teachings of Inspiration exactly as Cowper's cottager did; to those who are content with Bishop Butler's and Cardinal Newman's position, that Orthodoxy is infinitely more probable than any other scheme of belief; and to those who will have it that, if Christianity is not true in its supernatural and miraculous particulars, there is nothing in it, and we had better have done with it altogether.

What seems to me unphilosophical is, that educated Christian people should be willing, and even desire, to see unbelievers take this last attitude—should resent, so far from being grateful for, the great religious service that Matthew Arnold has rendered in enabling many, who would otherwise be left to chance or materialism for moral impressions, to profit by so much of the kernel of Christianity as can be enjoyed without the shell. Let it be granted that the shell imparts to the kernel its vitalising and sustaining power: we might still rejoice that those who throw away the shell may preserve and be the better of so much of the vitality and sweetness of the kernel as they can assimilate. The "Christianity all or nothing" theory, even if capable of philosophical proof, would condemn to moral and religious starvation some whom the proof would not convince, but who may manage to realise a very generous, even if not saving, maintenance from so much of Christian essentials as they can accept. To get hold of such men, and retain them under Christian influences, as "Literature and Dogma" did, was a great thing, especially as their number may increase, and still more especially as the spirit and tenor of the teaching was undeniably better than that of much orthodox religious instruction.

Matthew Arnold gives license to orthodoxy in the following lines, entitled "Pis-Aller":—

"Man is blind because of sin ;  
 Revelation makes him sure.  
 Without that, who looks within,  
 Looks in vain, for all's obscure."

Nay, look closer into man !  
 Tell me, can you find indeed  
 Nothing sure, no moral plan  
 Clear prescribed, without your creed ?

"No, I nothing can perceive !  
 Without that, all's dark for men.  
 That, or nothing, I believe."—  
 For God's sake, believe it then !

But this license, though valid, is obviously contemptuous. On the other hand, the most philosophical of the orthodox take a view which was well expressed on Mr. Arnold's death in an able article in the *Manchester Guardian*, namely, that what he believes to be verifiable is not so in the sense in which he assumes it, and that in rejecting the unverifiable he is either applying scientific processes which are wholly unlawful for the subject matter, and rejecting evidence which alone is appropriate, or he is eviscerating great historic forces of all that as a fact gave them their power.

I leave the question here, only protesting that it is unjust to treat Matthew Arnold as a sophist in theology ; that while "reserve is the secret of his art," he keeps little back that a sympathetic mind will not divine, seeing also the reason why it was not stated ; and that his religious work affords good ground for demanding as a philosophical, if not a religious, right that it shall be recognised by theologians how much of shelter and of home Christianity may have to

confer, even upon thinkers whose tread tramples into ruin its scaffolding of dogma.

In all that Mathew Arnold wrote there was a serious purpose that made his lightest playfulness sacred to those who found his suggestions profitable. Before the present audience, especially after a fortnight of memoirs and leading articles, I have not thought it necessary either to give many details, or to insist upon those much needed sane principles of criticism which were implied in the list of sayings which I read in my opening paragraph. I am disposed to conclude with another list—a summary of the strictly practical aims which Mr. Arnold assisted constantly by his writings. Some may be faulty. Several will be kept in view by others until they have been achieved. He was for the organisation of Middle Class Education as almost the first want of the day. He was against all mechanical instruction, as he was against all mechanical criticism. He was bitterly hostile to payment by results in Primary Schools. He was strong for the utility of a second language as a means of improving the general learning faculty of poor children. He maintained the absolute educational and intellectual necessity of the Bible in British education. He was for Free Schools, and ridiculed the idea that it would pauperise a ratepayer to get his children taught free at a school which he helped to support, and that it does not pauperise him to receive for a penny or twopence a week an education the much greater cost of which is defrayed by benevolence. He applauded the German system of teaching because of its elastic application to the intellectual necessities of each pupil. As between Literature and Science, he was for the humanities in education because more is got out of them that tends to improve the man. He was for an Academy—in France, and gave a comic account of what would happen if we tried to have one in England. He

was for the most liberal treatment of Ireland, liberal to an extent and in ways that English Home Rulers would scarcely relish, though he would not consent to Home Rule. He was a most extreme and positive advocate of social Equality, and thought more of it than even of Liberty or Fraternity.

Clearly Mathew Arnold was a man to be followed warily, and often not at all ; but to be listened to always and with all your ears. His mind was open to every touch and breath of ancient and modern, insular and continental, thought. There is hardly an error of human judgment, or social life and manners, which he has not explicitly or implicitly condemned, though there may be some towards which, ill-understood, he may seem to attract us. Allow for his epigram, for his pleasantry, for his cunning over-accentuation, for the tricks of his pretty, but never frivolous art. Guidance is often to be found in his disquisitions, when he has not quite embodied it in his counsels. On a subject within his range anyone who rightly values Matthew Arnold would prefer to do nothing before hearing what he has to say. And, at least, his writings never fail to bring the play of a clear, high, gentle, well-instructed mind candidly and interestingly to bear on all the more refined problems of society, with a constant flow of that healing knowledge of the best things which will always be a chief joy of those who have learnt the lesson he taught.

## ON THE INDIVIDUALITY\* OF ATOMS AND MOLECULES.

BY REV. H. H. HIGGINS, M.A.

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### ATOMS.

THE tendency of chemical research since the commencement of the present century has been to confirm the objective reality of these minute hypothetical forms. Atoms are not now regarded as indefinitely small; their diameters have been estimated and the number of atoms which would fill a box of measurable size has been computed. Hence, it follows that a very high degree of similarity must exist between the atoms of the same elementary substance. It has, however, been ascertained that they vary within certain very narrow limits. All atoms *may* be reducible to some ultimate principle; but atoms have never been divided, and the atom of a chemical formula is a distinct individual, which, as such, differs from an atom of a like kind; whilst it also differs, after another fashion—*i.e.*, in its idiosyncrasy—from the atom of a distinct elementary substance.

What constitutes the idiosyncrasy of an atom?

Let us begin with the best established of its qualities—weight. Why should an atom of oxygen be about sixteen times heavier than an atom of hydrogen, the size, or the volume occupied by it, being much the same? Gravitation is a mystery which is not solved when, for attraction, which

\* No exhaustive definition of "Individuality" has hitherto been found; but, at all events, it implies a certain amount of singleness and completeness in the object of which it is a character.

is declared to be inconceivable between bodies unconnected by a coherent medium, is substituted the *vis a tergo* influence, which some regard as possible through the agency of the ether. Perhaps so, but what does either attraction, or the ether, find whereon to lay a strong hand on one atom, but a light hand only on an atom of a different kind? This question has not been answered; no one has ever seen or handled an atom, much less investigated its contents. The hypothetical nature of the atom has hitherto discouraged enquiry, but a higher confidence in its objective reality has now removed the atom from the sphere of ideality to that of the physical cosmos.

That it is too small to be recognized by our organs of sight does not render it infra-natural. We are satisfied that an atom occupies space to the exclusion of all other ponderable matter; that an atom in motion will continue to move with uniform velocity and direction till acted upon from without; in short, that an atom is a body, and is subject to the natural laws which govern other ponderable bodies. But an atom is more than a body. It is not merely a very small bit, or a least possible corner. It has singleness and completeness. It is an individual which, being regarded as an ultimate and primordial form, does not seem to admit of augmentation or diminution.

To speak of an atom as if it were a glass ball, we might say that it cannot be broken or chipped, compressed or scratched; that no dust can settle on it, for the particles of dust are small masses consisting of myriads of atoms. An atom is, in fact, the most perfect, perhaps the only quite perfect, individual. Whatever it has is its own with an entirety which can in no other case be predicated, and its idiosyncrasy, which is the sum of its properties as an individual, must include something that is *sui generis*.

There are supposed to be about seventy elementary

substances, and, if so, there cannot be a less number of distinct simple atoms.

Upon the properties, combinations, affinities, and motions of these bodies, men, distinguished by their penetrating intellects, have been engaged in all quarters of the world for the last half century.

The result has been a course of observation and discovery, which has achieved the almost incredible feat of securing for the science of matter a progress *pari passu* with that of the science of biology, reconstructed and invigorated by the genius of Darwin.

It must be admitted that chemistry, as represented by its libraries of scientific treatises, its renovated nomenclature, its astonishing system of symbols, and its vast industrial products, exhibits a triumph of that kind of knowledge which is verifiable by experiment, a knowledge to which some would restrict the name of science.

Hence, the general elimination, from chemical works, of philosophical enquiries and considerations not obviously tending to increase the number of ascertained verifiable facts pertaining to chemical science.

For example, the enquiry, if an atom be an individual and possess a true idiosyncrasy—in what relation does it stand, as an individual, to another individual—*e.g.*, another atom, or an animalcule, or a whale?

It has been already suggested that the relation between individuals rests upon each having a completeness of its own. A mere bit of matter, as a lump of sugar, can have no such relation with another bit.

Now, therefore, we have entered upon a category of enquiries differing from ordinary chemical investigations in not anticipating solution or verification by experiment.

What, we may ask, is the atom's place in Nature? It is less easy to conceive anything like an atom within the

realm of psychology, or in electricity, or in light, or in any of its correlatives, or in the ether. The rest of Nature, however, seems to be made up of atoms. Not indeed of simple atoms, but of these, and of atoms in combination, forming molecules, which also have individuality and idiosyncrasy pertaining to them, as to the atoms. So long as the term atom was a mere hypothetical convenience, it was unprofitable to enquire for any significance in the atomic constitution of the matter of the universe.

It need not be so now; for the atom is to us the ultimate form of matter, and it is understood that atoms are known to endure, without being disintegrated, a heat vastly higher than that of the Sun, as shewn by spectrum analysis in the case of Sirius. It is probable then that the atoms have always obeyed the laws of matter and of motion, so that if we look back to a period ever so remote, our retrospect does not lead to a condition of chaos or to the fortuitous wanderings of atoms, but rather to a condition of order and obedience to law.

Moreover, whilst the course of ages has witnessed higher and yet higher forms of differentiation, our earliest horizon can show nothing of homogeneity, or of any approach to it, but, on the contrary, from the very outset it shows an innumerable multiplicity of individuals of a few kinds, endued with properties, qualities, and capacities which they possess still. As the term "homogeneous" has, on high authority, been applied to the primal condition of matter, it may be well to point out that, if atoms have the individuality indicated by the discoveries of Mendelejeff and other chemists, the nearest approach of matter to homogeneity has been no closer than may be illustrated by the contents of a bag of shot, or of a vessel of water, which is, in fact, no approach at all.

Something of this kind of answer seems to be suggested

by the present state of knowledge in reply to the enquiry—  
What is the atom's place in Nature ?

We may now pass on to another part of the same question—How does one atom differ from another ?

Sir Henry Roscoe, in his Manchester address to the British Association, states that the weights of the atoms of the elements approximate so closely to multiples of the weight of the hydrogen atom that some reason must exist for the coincidence, which is only short of absolute accuracy.

To myself, that for more than thirty years have noticed and contemplated similar infinitesimal discrepancies, this is extremely interesting, because it illustrates a frequent tendency in natural laws and relations, when under exhaustive examination, to disclose residuary unconformable phenomena.

The President of the British Association regards the hydrogen discrepancy as an occult but fundamental question of atomic philosophy, at present behind the veil, but, he doubts not, at no distant period to be brought into the clear light of day.

The President's confidence might be shared more readily if his difficulty stood alone. It is, however, I think, not too much to say that the approximate character of many natural laws, discovered only through matured knowledge, cannot be a matter of chance, but that some reason must exist for it, which reason may continue to operate in future, not to shake our confidence in the reality and stability of natural laws, but to prevent our knowledge of them, *at any given age*, assuming a dogmatic form.

The introduction of a new element, Helium =  $\frac{H}{2}$ , would perhaps serve a purpose in certain instances, but might probably render a number of other adjustments necessary. Sir H. Roscoe regards the incommensurability as so minute as to be only short of absolute accuracy. Now  $\frac{H}{2}$  would

only exactly serve to fit a discrepancy where the difference was not less than  $\frac{1}{10}$ , which cannot be regarded as pertaining to a high degree of approximation.

### MOLECULES.

In passing from the atom's place in Nature to consider the relations subsisting between one atom and another, or several others, within the sphere of mutual and reciprocal action, our thoughts must still be directed in pursuit, not of phenomena, but of reasonable and philosophical inferences, based on verifiable facts. .

The present subject is, however, vastly more comprehensive than the former. The kinds of atoms may constitute a series of about seventy terms; but the combinations of atoms in forming molecules are almost innumerable.

A molecule is defined to be the smallest particle of any substance capable of existing in a free state. In an elementary substance the molecule may be represented by the atom. But the molecule implies combination and liability to decomposition, and in these respects it differs from an atom.

What, then, happens when atoms combine to form a molecule; *e.g.*, when two atoms of H unite with one atom of O, to form a molecule of water?  $H_2O$ .

The atom of O possesses its idiosyncrasy under a new phase. It is no longer a disengaged O atom. Part of its capacity is satiated by union with the H double atom. It has, however, not altogether lost its properties, for it retains a strong affinity for the other elements, *e.g.*, the metal, potassium, for the sake of which the O in the molecule of water will forsake the H, decomposing the water.

The atoms of O and of H can, moreover, be recovered from water by electrolysis.

In the synthesis of water, therefore, atomic individuals of two kinds have partially lost their characters, and a molecule has arisen possessing a true idiosyncrasy, derived in some occult manner from the properties of the constituent atoms, which, however, are not entirely used up in forming the  $H_2O$  molecule.

The properties of water must be regarded as altogether depending upon the idiosyncrasy of its molecule. But the properties of the molecule are not primordial, as in the atom—they are derived. When, therefore, we regard the crystalline forms assumed by water, its freezing and boiling points, its weight, its remarkable specific heat, its curious property of suddenly expanding before reaching the freezing temperature—a peculiarity without which the world would soon be as lifeless as the moon—our sense of causality requires that we should seek their antecedents somewhere far back in the O and H atoms.\*

An ordinary investigation into the idiosyncrasy of the O atom will convince us that its capacity for combination with other atoms is very great; there are few kinds of atoms, I believe only one, viz., fluorine, with which it is not ready to unite in various proportions. Such combinations are said to be the result of *chemism*, or chemical affinity, a force which is declared to be of the same nature with mechanical force. To speak more accurately, some who admit chemical affinity to be still obscure, assert that the tendency of modern discoveries is to indicate that chemical affinity is mechanical in its character.

I shall endeavour to shew that this is true only in the same sense with the assertion that modern discoveries point to the primal condition of the universe as being homogeneous, a misconception with which we have already dealt.

To begin, then, with examining the results of chemical

\* *Nihil in molecula quod non prius erat in atomis.*

affinity. The process of chemical combination takes place under our own observation. We can construct  $H_2O$ , the molecule of water, and have something to say on the operation. After combination, the oxygen is still there in some sense, and the hydrogen is still there in some sense, but from their union has sprung a foreign individual,  $H_2O$ , marvellously distinct from either. It has certain of the qualities of its antecedents, such as weight and extent, but therewith a set of entirely new properties, together constituting the idiosyncrasy of a distinct individual,  $H_2O$ .

Now to affirm that the process by which this is effected is mechanical is, I think, to misrepresent the limits of mechanical efficiency. It is unworthy of serious enquiry to say—Why, what else can it be? Mechanics is the science of motion, and is not chemical combination a case of motion?

We are now at the very nucleus of our question, and desire to be specially on our guard against, and to keep others from, playing fast and loose with the meanings of terms.

The laws of motion and of mechanics are uniform and simple.

It may be said that "*molecular mechanics*" are intended — something quite distinct from the ordinary mechanics of masses.

Such a statement may be responsible for any amount of error, for, so, molecular mechanics would be the science of an unknown agency called into existence for the purpose of tiding over a difficulty.

Now, in the dynamics of gaseous particles, the principles of mechanics are gloriously applied to solve wondrous problems, but the beauty of the solution lies in its being obtained by the recognised laws, and not by a new science such as that of molecular mechanics, created *pro re nata*. To be able to account for the pressure on the side of a

vessel, due to the motions of gaseous particles, is legitimate mechanics, but the problem is something very different from that we have had to deal with in the process of the nascent individual, when  $H_2$  combines with O to form a molecule of water.

No parallel to this, in law or sequence, can be found anywhere in Nature, except on the same lines, namely, of atoms combining to form molecules. But, I think, it is impossible not to be reminded of operations which everywhere, and at all times, prevail in the presence of organic life.

For example, the fertilization of an ovum, wherein two elements combine, each of which is a distinct individual, having an idiosyncrasy of its own, the result being amazingly different from either. Thus it is with the incipient molecule. No one questions that the phenomena of fertilization are dependent upon the presence of life; it may, at least, be possible that the generation of a molecule from two or more atoms may equally be dependent on some form of life, or its equivalent.

In this way we are led to the hypothesis of the existence in the atom of a property resembling life, whatever life may be. I do not pretend to be able to explain life; but I believe it to be grossly unscientific to define life as if, exhaustively, it were the product of *known* laws regulating matter in motion. I do not look upon life as miraculous, but as involving laws other than we know at present.

I am well aware that this is no new position. James Hinton, one of the most profoundly thoughtful men that Liverpool has numbered amongst her citizens, takes up inorganic life strongly in his work entitled *Life in Nature*; but the individuality of atoms was unknown to him.

As a philosophical deduction, the universality of life has been held from ancient times, but it has never advanced beyond a limited acceptance as a speculative conception.

If it now occupy a vantage ground, it is, I believe, almost entirely through the prominence given to the individuality of the atom.

I trust I may be pardoned the introduction of a brief episode relating to my own progress in accepting the proposition I am bringing before you in this paper.

Having been for many years a student of James Hinton's works, nothing held by him was indifferent to me. I wished, if possible, to agree with him in beholding life everywhere, and to some extent I did so; but notwithstanding the beauty of the atomic theory, the atoms were a difficulty to me. As representing the elementary condition of matter, the atoms seemed to be deficient in order.

Homogeneousness has always been most repulsive to me, as being a cloud out of which nothing could escape or be developed. But why need I dwell on the deficiencies of atoms? All that seemed to be required of order and individuality has been shewn to belong to them by that inexpressibly astonishing law of their periodicity, discovered by Newlands, and prosecuted by Mendelejeff.

The seventy atoms classified on a natural system, founded on all the observable properties of each atom, are understood to form an ascending series like the turns of an atomotaxic spiral. So uniform are the grades in which, that gaps in the series were detected, and led to the prediction and ultimate discovery of the new elements, Gallium, Scandium, and Germanium.

I have regarded this as the greatest of all discoveries for the following reason. Other laws illustrate order where order was previously presumed to exist; but this brings order down to the ultimate condition of matter, where, at all events, the presumption of order was not strong enough to resist the barbarous invasion of the doctrine of homogeneity.

After the establishment of Mendelejeff's law, the recog-

nition of some equivalent to life in the atom became inevitable, and its acceptance is, I think, only a matter of time.

If thus much be admitted, the existence of a common base of all the atoms becomes more probable; but it has not yet been shewn.

By what name shall we designate this supposed life without protoplasm—this vital principle of an atom?

In the case of a microscopic organism, known as a Radiolarian, Haeckel proposes the term *Zel-seele*, or cell-soul, for the vital principle of his unicellular animalcule, or protozoon, and regards the cell-soul as the “unit regulating the animal and vegetal functions of the organism, and the special organ of reproduction and inheritance.” Not a little astonishing, certainly, considering his former impetuous protests against vitality; but we may gladly let bye-gones be bye-gone.

I should prefer the term life-unit, but it is cumbersome, and I propose to use the term *bios*; premising that in an atom the *bios* is intended to denote that primordial potency, by virtue of which the atom possesses and exercises elective affinity, and whatever else may unite to make up its idiosyncrasy as an individual.

To return to the molecule of water,  $H_2O$ . It has a *bios* of its own, which, as we have seen, does not extinguish the *bios* of the oxygen atom, or the *bios* of the double hydrogen atom. We are satisfied that the *bios* of the molecule,  $H_2O$  is in some way derived from its component atoms. Yet they have not, in combining, destroyed their respective *bios*. Surely, this looks very much like life *which can spend and not be spent*; but not in the least like mechanical action, which can do no such thing.

Add a single incandescent lamp to a series of a thousand, adjusted so as to use up the current supplied by a dynamo; all the other lamps must suffer a corresponding loss. It is

not uniformly so with life, which in its lower powers is indeed spent in spending. A plant sacrifices its life for the seed. In a living organism, reproduction is often naturally associated with death. But in the higher powers of life is realized the adage "there is that scattereth and yet increaseth." In the teacher, the composer, the artist, the poet, and the lover, the goings forth of life have for their issue the power of living more abundantly.

It may be replied, Why use such a term as *bios*, and why not at once say the "properties" of the atom? Because a mass that is a mere quantity or a fragment, and has no individuality, may have properties. Our contention from the first has been that we are speaking of individuals, not of bits or of fragmentary masses.

The molecule of water is a simple example, but it will suffice to illustrate certain features in the relations between atoms and molecules.

1. The resulting molecule,  $H_2O$ , is as purely an individual as the atom H or O.
2.  $H_2O$  derives its *bios* from the *bioi* of H and O.
3. No one from his present acquaintance with H and O could predict the characters of the *bios* of  $H_2O$ , resulting from their combination.
4.  $H_2$  and O do not extinguish their *bioi* whilst entering into the constitution of another *bios*.

Such are features in the process of chemical combination.

In the above list, substitute the term Animal, or Plant, for  $H_2O$ ; and the terms Sperm-cell and Germ-cell for H and O, leaving out the words molecule and atom. All the predications will hold good, and be fairly descriptive of features in the process of fertilization.

1. The animal or plant is as purely an individual as the sperm-cell or the germ-cell.

2. The animal or plant derives its *bios* from the *bioi* of the sperm-cell and the germ-cell.

3. No one ignorant of the history of the cells could, from ever so searching an investigation into the sperm-cell and the germ-cell, predict the characters of the *bios* of the animal or plant resulting from their combination.

4. The sperm-cell and the germ-cell do not extinguish their *bioi* whilst entering into the constitution of another *bios*—that of the resulting animal or plant; for inherited characters transmitted through the sperm-cell or the germ-cell sometimes do not make their appearance till life is far advanced.

It seems a reasonable inference that what occurs in the comparatively simple molecule  $H_2O$ , occurs also in the highly complicated molecule of the carbon products, in which perhaps twenty or more atoms combine to form an individual molecule. It seems also probable that not one of these atoms wholly loses its *bios*; but it is quite plain that a new *bios* and a new individuality have made their appearance in the new complicated molecule.

A single molecule may contain atoms in number from 2 or 3 up to 300 or 400.

The highly compound molecule of the carbon product has, therefore, not only a peculiar *bios* of its own, it is full of constituent *bioi*, and probably reaches the highest form of individuality capable of being possessed by a molecule.

There are, it may be, seventy kinds of atoms; but the number and variety of molecules exceed all computation or conception.

It is one of Nature's ways to multiply individuals immeasurably in excess of the kinds of elementary constituents. It is so amongst the highest known individuals, the members of the animal and vegetable kingdoms. There are frequently more living individuals in a wayside pool of water than there

are diverse kinds of animals and plants known in the whole world.

We may now proceed to consider the combination of molecules in the simplest organism—the amœba. The still more primitive moneron, if not wholly a hypothetical animal, is very unfamiliar to us in this country ; but most of us have seen an amœba.

The size of the amœba, or of the most minute organism made visible by the microscope, is such as to indicate that it consists of an immense number of molecules ; and the character of its matter shews that these molecules are highly compound, being individuals themselves, and containing hosts of *bioi* belonging to molecules of a lower rank, or to atoms. Yet the amœba is an individual, and has a life unit of its own. Wondrous indeed is the succession of life within life, in the ascending series which is here indicated ; at the summit being the life unit of the amœba, the lowest known animalcule. Yet here, apparently, we may detect a missing term—an indication of that hiatus which has been supposed to mark the distinction between living and lifeless matter. We have seen some reason for holding that no matter is lifeless. There is an ascending progress from the *bios* of an atom to that of such a molecule as  $H_2O$ , and thence to that of the highly compound molecule, a little world in itself ; and yet it must be admitted that the series scarcely seems to lead up without a break to life as found in the amœba.

Biologists, who acknowledge a physical basis of life, may find in protoplasm a link between lifeless and living matter. But protoplasm is altogether on the living side ; for no one ever saw an example of general protoplasm, but only the protoplasm of some special living thing.

The first appearance of life has been regarded as unquestionably involving a break in the continuity of Nature.

Mr. Darwin writes :—" It is mere rubbish thinking of the origin of life; one might as well think of the origin of matter." (*Life*, vol. iii, p. 18). But the individuality and periodicity of the atoms, on which the *bios* theory rests, was not established when Mr. Darwin wrote, *i.e.*, in 1869.

The generation of a molecule from the combination of atoms, *mechanically considered*, is a break in continuity, and the *bios* theory has been interposed, not to explain the phenomenon, but because a process, somewhat analogous, is general in the animal and vegetable world.

On the basis of mechanics, the old break in continuity at the origin of life still remains, and will remain; and it seems to me that Evolutionists have to choose between discontinuity and the recognition of a universal principle of life, which may be regarded not as mechanical, but as inherent in the primordial atom, and inherited in the molecule, in the lowest organism, and in the man, so far as they are individuals.

Perhaps no better place than this may be found for a reference to certain cognate difficulties.

I. Wishing to profit by a great example, I may here refer to a weighty discrepancy between chemical combination and fertilisation. The molecule, once formed, may remain unaltered; the organism never ceases to undergo changes during the whole cycle of its existence. Perhaps, however, it may not be strictly accurate to say the molecule remains unaltered, for its environments are ever inconstant as the ages run; and very low organic life partakes almost of molecular uniformity. Mr. Ruskin points out that—"far above, among the mountains, the silver lichen-spots rest, star-like, on the stone; and the gathering orange-stain upon the edge of yonder western peak reflects the sunsets of a thousand years."—*Modern Painters*.

*Objection.* To have any meaning worth contending for, the term *bios* must imply a certain amount of spontaneity.

If, therefore, an atom possess a *bios*, it is difficult to conceive of the entire constancy of its behaviour.

Yes, if the *bios* of an atom must in all its properties resemble the *bios* in the higher forms of life. This great difficulty I must attempt to meet.

Life then, seems to me to be one of Nature's verities found in vast ascending series, the extreme terms of which are hidden. Take, for example, the most intense cold ever produced—that attending the vaporization of liquified hydrogen. There is no such thing as cold; it is a purely negative term. That which is present as temperature in a particle of frozen mercury, is denoted by a very low term in an ascending series, of which the heat of Sirius is a very high term. To take another instance. Darkness is not an entity, a darkness that may be felt is, really, a very low term in that series of gradations in which light reaches an effulgence which the eye cannot receive.

These series, and there are others, transcend our knowledge at both extremes; yet all the intermediate terms differ only in order and degree. The *bios* in the atom may no more resemble the central *bios* in man than darkness resembles light; yet the *bios* series may be one throughout. It may not be unreasonable to assume that in the gradation by which life advances, from its status in the amoeba to its more highly developed form in man, we have just the middle terms only of a life series, corresponding in some measure with the series which we know in heat and light; and that, below the amoeba and above the man, the life series extends, we know not how far, the highest and lowest terms having positions in the universe further asunder than the extreme terms in the series for light and heat. If it be thus—spontaneity in the *bios* of the atom may be only such as is adapted for its sphere, and need not affect the constancy of its behaviour.

II. It has been claimed that the *bios* theory, if I may be permitted the use of such an expression, is the result of modern researches into the individuality of atoms and molecules. Yet there is probably no subject more perplexing in some of its aspects than individuality.

The Hydra may be divided into a hundred pieces, each of which will develop into a perfect Hydra. Is there a life unit in each of the pieces; but if not, when does it enter?

There are also compound animals, and colonial animals, such as sponges and corals; and compound plants, such as merisporos, in all or any of which it is hard to say what constitutes individuals; even the existence of individuality has been denied.

I would not make light of such difficulties, or exceptions, or denials, for they are certain, when properly treated, to prove instructive. But, after all, individuality stands out in the system of Nature with an overwhelming prominence. Unity, with individuality for its complementary feature, is the chief character of the universe. And the weakest point in the *bios* theory will not, I think, be found in the indefinable character of the individual.

The facts of substitution exemplified in acetic acid, indicating the influence of *position* rather than of *character* in the atom; also the facts of allotropy seen in carbon, phosphorus, sulphur, etc.; also the somewhat peculiar molecular condition of ozone—all these, and other facts, have been suggested as possible difficulties in the way of the *bios* theory. But where so significant a system as that of Periodicity can find a home—amongst those same atoms, whatever may be true in the *bios* theory, need fear to meet with no manner of incompatibility.

Certain other objections are alleged in connection with the doctrine of the conservation of the physical forces, the action of which is said to be exhaustive, and to leave no room

for the activities of the *bios*, which are psychical rather than physical.

I submit, on the other hand, that the *bios* is related towards the physical forces not so as to supplant them, but in such a way as to induce them to act as they would not act, but for the presence of the *bios*. For so, matter, it is known, will take up molecular relations which, otherwise, it will not assume. *Vide* Huxley on *Biogenesis and Abiogenesis*.

It would weary you if I were to dwell upon the grades of life in the series ascending from the amoeba, yet they are of much importance in support of the *bios* theory; and it is hardly possible to appreciate the relations of this theory towards the highest known term in the life series, without at least a glance at the number and variety of the intermediate terms.

But at all events, we must now pass on to man.

If the inference drawn from the molecule of water,  $H_2O$ , be sound, every atom and molecule in our physical frame is an individual and has its *bios*.

But, beside these, the human body contains many whole systems, consisting of formed and formative matter, arranged in distinct histological constituents. Such are the cells of the various tissues and vessels, the lymphatic bodies, and the corpuscles of the blood.

Each of these may be compared with a complete organism having its molecular *bioi* and dominant life unit.

The subject does not require me to enlarge on the countless assemblages of living communities gathered within the empire of the human body.

The point calling for attention is the immensity of the interval between our living constituents, and the human life-unit that is at the head of such an empire.

We seem to be repeating the story of our first pages respecting the atoms and the molecule of water. We saw that in no degree could our knowledge of the atoms enable us to predict the idiosyncrasy of the molecule,  $H_2O$ , or the consequences of its multiplication to compose the oceans, seas, rivers and clouds of our world.

The *bios* of the atom may be a term in the same vast series with soul or spirit, and though we must not go down to the primordial atoms and their ways to be *outside* wonderland, yet every other wonder sinks into insignificance before the human *bios*, soul, spirit, or life-unit, in its living kingdom, the physical frame of man.

If it be said—Heredity hath done this. Fully admitted. But if we had toiled upward from the amoeba—not through Hæckel's twenty-two stages, but through twenty-two thousand stages—and if we could have seen first one and then another increment, in succession, raising the unit of life to its present human elevation, should we be less impressed with the mighty interval between the life-unit that governs, and the *bioi* which subserve, in man?

For the *bioi* remain as they were from the beginning, only they are true *bioi*, not mere symbols but sources of the hardness, and the fusing point, and the specific gravity, and the elective affinity in the atom of an element, and their peculiarity is this, that ever as they combine, grade above grade, in molecule or organism, there comes in something, not supernatural but supramechanical and unforeseen.

It has been thus a thousand times repeated, till on the scene has appeared the life-unit capable of sustaining in Nature the part borne by nations and communities, but chiefly by individuals, constituting the glory of our race.

In conclusion, let me press the final enquiry I have to bring before you—Is it so very wild a speculation that a

world which is made up of living constituents should, as an individual, have a *bios* of its own ?

I once saw in Venezuela a tree, popularly called Humboldt's tree, which carries a botanic garden on its head, and can shelter an army beneath its branches. It is an individual, and has a *bios*, for it is the product of a single bud or seed by orderly development.

Our world, as a whole, is the result of development, and, as an individual, is a member of a planetary family in which every heavenly body feels where the rest are, and would be missed by them if its place were no longer filled.

Professor Huxley, in his *Critiques and Addresses*, thus writes, p. 309 :—"It is a probable hypothesis that what the world is to organisms in general, each organism is to the molecules of which it is composed."

The cold of Neptune in those far-off regions at the limits of our planetary system cannot destroy or even starve the *bioi* of its atoms. The heat of the sun leaves the *bios* of the hydrogen atom, and the iron atom, and the sodium atom, unaffected in the fierce ragings of the photosphere ; or they would not be recognizable.

Need we stay our enquiry at this point ? The universe has systems as countless as the atoms in our globe, and there is sympathy between them, for they move together, and life is everywhere.

May not the universe itself have a *bios*, a central life-unit, as far transcending the whole cosmos of gravitating bodies as the human life-unit exceeds, in noble capacities, the living cells, and vessels, and corpuscles of our physical frame ?

We are, hereditarily, in matters relating to the inner life, so disinclined to receive grave instruction from Nature, that even if the *bios* theory and its inferences could be rendered far more clearly valid than they are shewn to be, nothing

more seems possible at present than their extremely limited acceptance. Yet the train of thought to which we have been led, culminating in a single, central, supreme, sympathising and sustaining life—suggests, feebly indeed, but, it may be, not falsely, something of the anarchy of Polytheism, with its discordant government; of the vagueness of Pantheism, with diffused life everywhere, and true life not anywhere; of the presumption of Positivism, in assuming that the laws of Nature, as known in 1888, are sufficient for all that is needed, or indeed possible, to be known; of the needless reserve of Agnosticism, for how much do Agnostics expect to know of the supreme life of the universe, before they are content to admit that they know anything at all? of the delusiveness of rigid Determinism, seeing that some degree of spontaneity, sufficient for its sphere, lies within the atom at the very base of all.

I doubt not that many wise and noble minds have found refuge in all these, as also in other and greater “phases of faith,” and have thought them to be final; but faith cannot be stereotyped whilst knowledge is progressive.

Lastly, if my paper be said to be an attempt at a forensic treatment of a scientific subject, may it not be replied that in the true relation between the life-unit in man and the Supreme Life-unit are bound up verities which will not yield themselves to be expressed in scientific terms. Such constituents in man’s idiosyncrasy are his affections, emotions, passions; his love, hope, veneration. For all these a higher sympathy is needed than can be found in the logic of science. Even if by scientific terms an infinite force, or power, or intelligence, could be represented, the thought conveyed would indeed be amazing and sublime, but man, after all, might be left with the feeling of being absolutely without a friend.

In reading the life of Darwin, vol. iii, I have been much

interested with his strong regard for the theory of Pangenesis, his own child he calls it; and he seems to have fondly clung to it till persuaded by his friends Lyell, Hooker, Huxley, and Asa Gray, to give it up as a speculation likely to damage his chief work on the *Origin of Species*.

From its first appearance I was deeply impressed by Pangenesis, and, besides advocating a discussion upon it at the Glasgow Meeting of the British Association, I read a paper upon the subject to the Liverpool Naturalists' Field Club for 1868, *vide Proceedings*. If Mr. Darwin had known what is now known of the individuality of the atoms; far more, if he could have seen in Nature sufficient reason for assigning to an atom a place in the lowest term of the life series, it is probable that nothing would have induced him to give up his cherished hypothesis of Pangenesis. The enquiry how the *bios* theory and Pangenesis afford mutual confirmation must be postponed for the present. Darwin writes to J. D. Hooker, 1868:—"You will think me very self-sufficient when I declare that I feel *sure* if Pangenesis is now still-born it will, thank God, at some future time reappear, begotten by some other father, and christened by some other name."—*Life of Darwin*, vol. iii, p. 78.

I have now only to add that in writing of the "*bios* theory," as if it held an acknowledged place, a sense of crudity has oppressed me, as, I fear, it may also have occurred to some of my friends. The avoidance of intolerable circumlocution may be my apology. The theory, taken by itself, seems to propose that we may derive some apprehension of the Supreme Life from the life of the atom, by a process of working from the circumference towards the centre. Admitted. But the theory is not to be taken by itself, and I venture to submit that it is not for us to begin with working from the centre; otherwise, our centre might be a mere irrational creation of superstition and imagination,

as have been so many centres around which hosts of devout worshippers have been, and still are, assembled.

In early days, most of us were carefully taught the omnipresence of the Supreme; and I know not any thought more awe-constraining than the recognition of the presence of One, unseen, to whom the darkness and the light are both alike. Perhaps such a submission in religion to impressions of high reverence towards an Unseen Eternal may be a very special need of our day. Yet I cannot agree with an aphorism delivered by Goethe, and twice quoted by the late Matthew Arnold in the current number of the *Nineteenth Century*—

“The thrill of awe is the best thing humanity has.”

Not so. The rarest, perhaps, but not the best. The spirit of alliance—call it love if you will—does most of the good work that is done upon earth.

The character of the material aspect of the cosmos appears to be individuality, segregation, separation. The character of the life aspect of the cosmos is combination, or the spirit of alliance, which, in man, is the inner angel that prompts him to do well for the sake of those he loves. But not even an atom lives for itself alone.



## NOTE ON THE FOREGOING.

BY PROFESSOR OLIVER J. LODGE, LL.D., D.Sc., F.R.S.,  
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MR. HIGGINS' argument, as I understand it, may be shortly quoted somewhat as follows.

The properties and functions enjoyed by an organism must, in some sort, be derived from properties and functions of the cells of which it is composed. All that the complex organism is or can be, is a lofty manifestation and development of apparently lowly powers latent in its component cells.

Again, the properties of the most complex molecule known to chemists must derive themselves, somehow or other, from the properties of its constituent atoms. It cannot be supposed that the mere grouping of atoms together introduces anything completely and intrinsically novel. All the properties of a molecule must be, in fact, latent in the atoms.

It may likewise be asserted that, since a cell is composed of an aggregation of similar molecules, all the functions possessed by the organic cell must be a development of powers latent in each molecule of which it is composed.

Now, supposing each of these three steps granted, they constitute a staircase capable of carrying us straight from an animal organism to the atoms of which it and the rest of the material universe are composed; and we are justified in asserting that the functions and processes manifested by the highest forms of life are all latent in the atoms of the chemical elements, and are thence derived.

Now, if this be so, how are we to explain it? Are we to say that atoms possess something of the nature of life? Or

are we to say that the processes and functions of living beings are but a display of molecular forces acting according to a few simple mechanical laws?

This is the point at which Mr. Higgins appears to diverge and join issue with the speculations of certain men of science who would seek to reduce all vital phenomena ultimately to a complex play\* of mechanical forces on inert atoms. Mr. Higgins prefers rather to argue that, inasmuch as vital actions and processes are conspicuously something higher and distinct from common mechanics—something not to be explained by or deduced from Newton's laws of motion—therefore the chain of argument, or staircase already constructed, leads us to postulate something of the nature of a life-potency or vital-principle, of however low an order of development, in the atoms themselves. For this germinal something he invents the sufficiently satisfactory name, "bios."

Well, then, the question raised by the paper is this:—Granted the assumption that whatever a complex or aggregate of similar bits contains, the same must also be, in some sense or other, inherent in the bits themselves, Are we to say that life is a mechanical process of atoms and forces? Or are we to say that the atoms themselves contain some lowly representation or nucleus of the higher life?

I cannot tell whether the enquiry is a new one. I cannot tell how long it will be before mankind can hope to attempt to really answer it in any complete and intelligible manner. But whether new or not, and whether presently answerable or not, it is something to be able to put the question; and it is well to have the question put with such clearness and

\* On this Mr. Higgins remarks that forces do *work*: they never "play." This is good as a pun, and good also as reminding us not to permit a rhetorical use of this convenient word to seem to convey vaguely more than is really known. Properly the word "play" in this connexion is approximately synonymous with "display."

ability, and copiousness of illustration, as it has been put with by Mr. Higgins.

For myself, I presume not to offer an opinion on the main points of the issue, but I may venture on one or two suggestions.

It is very natural for a biologist like Mr. Higgins, accustomed from his youth up to study life in all its forms,—it is very natural for such a man to see life, or resemblances to life, everywhere, and to detect in the marked “individuality” of an atom, and in the “family relationships” among atoms, close analogies with things sufficiently corresponding to bear the same names among organised living beings.

On the other hand, it would be very natural if a person like myself, whose tone of thought is physical and mechanical, should, if ever he happened to seek to explain the nature of life (a thing which I feel myself nowhere near the attempting), have his vision filled with mechanical forces and inert atoms, and seek to discover how a play of such forces and assemblages of such atoms could ever assume such mazes of intricacy as to put on the appearance, and perform the functions, of vital processes and living beings as we know them.

But now I want to suggest that these two apparently distinct modes of thought are not mutually exclusive. A different nomenclature is used, and different aspects are consciously attended to, by opposite schools; but perhaps the same objects are being regarded all the while.

May it not be possible that both modes of stating the facts contain some portion of the truth, even though neither goes very far towards exhausting it?

And the attempt to think of life as possibly ultimately explicable on mechanical principles has this advantage over the statement that life is inherent in matter, viz., that it is in its nature verifiable, and the attempt to verify it must

lead us, one way or another, nearer the truth ; while the latter statement is in its nature unverifiable. Moreover, it does not explain a complex thing by anything more simple ; it really leaves us in the dark, with the mystery unsolved, and apparently insoluble.

Perhaps this may seem an unfair way of putting the distinction I want to convey, but what I mean is this :—either life is ultimately explicable on mechanical principles or it is not. If it is not, then all attempts at elaborating such an explanation will, in the long run, conspicuously fail ; and this failure will be very instructive. If, on the other hand, life is so explicable, then attempts to elaborate the explanation are attempts in the direction of the truth.

But if we start with the belief that life is, in its nature, inexplicable, being nothing but a marvellous development of properties already inherent in the atom—properties of a distinct nature, and not related to any common physical or mechanical or chemical laws,—then the springs of effort are to that extent sapped, and not much more will be gathered by such a believer concerning the ultimate nature of the mysterious entity so postulated and conceived.

It may be that, in making these few suggestions, I am merely darkening counsel by words without wisdom. If anyone feels so, I should not be disposed to differ from him. Still less am I disposed, on the main contentions, to differ from my friend Mr. Higgins ; for in one, and perhaps the highest, sense, some *bios* theory must undeniably be true.

If it is asserted that, underneath all these animate and inanimate beings, at the foundation of all this agglomeration of particles and cosmos of worlds, there lies a deep living and all pervading Ens—a being illimitably unknown and immeasurably unthinkable,\* by whom, and in whom, and of

\* Mr. Higgins objects to this statement as dogmatically agnostic. It is not so intended. Ignorance I confess ; dogmatic agnosticism I hope to

whom all things consist; so that this stone, this drop of water, this plant, this animal, this conscious ego, as we know them, are but sensible and trivial manifestations of some fragment of the one great infinite and fundamental existence—then neither I nor any other student of natural knowledge can have one word to say against such a view: a view which, more than any other, seems to be the outcome of modern scientific gropings; a view which is being borne in upon students of many diverse kinds of learning; a view which, I believe, does, in a dim and indistinct way, represent some small portion of an ultimate truth.

But then be it noted, that not matter only is to be thus regarded as a fragment of the Divine; force also, and energy, time space and everything, must be equally submerged and transfigured in the higher pantheism.

To call matter inert is not to abuse it. It definitely is inert; it possesses inertia. So neither is it abusing force to call it mechanical. It definitely is mechanical; it can be used to drive machinery.

Until we know what is the ultimate nature of matter, and what the ultimate nature of force; until we are sure that their ultimate nature is something low and undignified; so long we may be permitted to hold that, if ever an explanation of life is forthcoming on mechanical, or physical, or chemical grounds, there will be no degradation to the sublime nature of life by the connection; for the things to which it is related must be, in their true nature, as lofty as itself.

keep free from. To the phrase *infinitely unknowable* objection might rightly be taken, but the phrase "infinitely unknown," applied to an infinite being, is mathematically correct, notwithstanding any finite knowledge of some aspects of such a being which may be possessed. How much is at present known concerning the Deity it is for students of Theology, not for me, to say; but, unless they can claim the possession of infinite knowledge, the object of their study is still "illimitably unknown," and, to any finite mind, "unthinkable."



## INDUSTRIAL EDUCATION.

By FREDERICK W. EDWARDS.

IN the autumn of last year the first European International Congress on Technical Education was held in Bordeaux, under the auspices of the Philomathic Society of that city. I attended this Congress in the capacity of a delegate from the Liverpool School of Science. Representatives to the number of 800 were present from all parts of the Continent. During the hours that these continued to arrive, I had leisure to make a ramble through the streets of this ancient and famous municipality, which, under the Black Prince, was at one time the seat of English government in that part of France—the capital of the great province of Aquitaine. The historic associations of Bordeaux are well known, and I need not dwell upon them now. Suffice it to say, that I was struck with admiration at the beautiful boulevards, the broad thoroughfares, the lofty, regular and highly decorated buildings, and the splendid Hotel de Ville, of this important centre of the wine country of south-western France.

The *Ecole Professionnelle*, in which the Congress met, is a large and well appointed institution, supported by the County Board, the Municipality, and the local Chamber of Commerce. In addition to being an apprenticeship and secondary school it offers instruction to about 2,000 students in evening classes. An admirable collection of samples of practical work, executed by the students, was laid out in the rooms of the school, giving a comprehensive idea of the varied nature of the training given within its walls. The solid and artistic method of building construction to be found exemplified in all classes of property in the city may

be traced to the influence of a highly organised school of masonry. The students go through a thorough grounding in the theory of masonry, and are taught to draw to scale, and plan designs of ordinary building construction in all forms. They are also supplied with small sections of masonry, and are required to erect on reduced scale the structures already committed to paper. The successful results of such training, both in theory and practice, were seen in the many varieties of work, embracing every style of architecture, completely filling one room, and put together by the students who are educated for the positions of foremen, managers, and masters.

After a formal reception of the delegates, and the appointment of the official delegates from every nation represented to act as a general council, the Congress was divided into two sections :—

A—Industrial Technical Education.

B—Commercial Technical Education.

In order to keep within the limits of papers read before this society, it is only possible to deal broadly with the work of the Industrial section. Being the first International Congress of its kind, each country had been requested to furnish reports as to the past and present state of their Technical Education, so as to form a basis for the work of the Congress and those which might be held in the future. These reports were of an exceedingly instructive and valuable character, and I propose to notice later on some of their most salient features in comparison with the reports from our own country. All the reports, however, have been recently published in a volume, which is accessible to those who are interested in the subject.

Other important papers were read, embracing almost the whole range of Technical Education. The discussions which afterwards took place considerably enhanced the value of the

communications, and cleared up many points of apparent conflict and misunderstanding. Much difficulty was experienced in arriving at a common agreement as to what constituted the real work and scope of the Apprenticeship School, the Industrial School, and the Professional School—what in short was their denomination. After much excited discussion, it was decided that for future guidance it would be advisable to adopt international denominations, showing the exact constitution and aim of each. These denominations will probably be formulated at the next Congress, to be held at St. Petersburg, in 1888. Until such be approved, and a true basis of comparison instituted, it will be impossible with any degree of accuracy to criticise the relative merits of the several national systems, much less to point out the modifications or extensions desirable in English schools of a similar type. The absence of concerted action makes it extremely difficult at the moment to classify English Technical Schools.

As an evidence of the wide character of the Congress, it may be observed that among the miscellaneous papers contributed, the following subjects were referred to:—The organisation of evening technical instruction by the Science and Art Department of South Kensington and the City and Guilds of London Institute, in which the constitution, progress, and nature of the work undertaken by these bodies was ably reviewed by Sir Philip Magnus. One of the Assistant Charity Commissioners of London strongly opposed the further introduction of day apprenticeship schools for the artisan class, or the appropriation of imperial revenue to that purpose. He also urged the necessity for a system of manual labour in Elementary Schools, strictly confined to the principles of carpentry and modelling in clay. Another member showed, with great minuteness, how it was possible to complete the ladder of Technical Education, and how

desirable it would be to establish a real connection between its commercial and industrial aspect. A third delegate insisted upon the introduction of the principles of Political Economy. A fourth representative showed the desirability of apprenticeship schools, and the necessity of their teaching professional drawing. Among other communications perhaps the best was one containing an interesting recapitulation of the educational power of the Industrial Museums in France. The reader had little difficulty in demonstrating the beneficial results that had already accrued to his own nation, and concluded with a strong contention for the establishment of such museums in every municipality or industrial centre.

It will be perceived that there was no lack of information. Short but excited discussions always took place, in which the members eagerly argued as to the merits of the subjects introduced. The attempts of Russians, Roumanians, Servians, Belgians, Italians, Swiss, Spaniards, and Englishmen, to speak in the polished and diplomatic language of France were instructive and often amusing. It was no uncommon occurrence to listen to a delegate painfully endeavouring to make himself understood in French as spoken in his own country. Several delegates often found it necessary to conclude their remarks by resorting to the use and force of their own mother-tongue—their linguistic vocabulary having become exhausted.

It must be deplored that Germany was the only important country that declined to recognise the Congress by sending representatives. The absence of a nation which has made such extraordinary progress in Technical Education during the past few years, as well as its refusal to meet the delegates of other continental people, and discuss in a generous spirit non-political questions, upon which they were qualified to speak with so much advantage, can only be a matter of the deepest regret.

The outcome of the Industrial Section was the proposal of many resolutions. The most pertinent of these were afterwards unanimously accepted by the entire number of members at a concluding general meeting, and their purport is condensed as follows :—

I. "That in countries where the law prescribes the teaching of drawing in primary schools, such instruction should be faithfully carried out."

II. "That industrial and professional schools which follow primary elementary schools, and which offer instruction in the different branches of industry, should be increased according to local needs."

III. "That apprenticeship schools should be organised, by the aid of the various communities, as well as by the State, to serve as types for the advancement of the industries of particular districts."

IV. "That, by subsidy or other means, the community and the State should combine together to encourage day and evening lectures in apprenticeship schools or in any institutions having for their object a theoretical or practical industrial training."

V. "That the community, as well as the State, should report as to the necessity of developing theoretical and practical instruction in agriculture, and that those who earn their livelihood thereby should have the same facilities afforded to them as the industrial populations of towns and cities."

VI. "That children should not be admitted into apprenticeship or professional schools, or any technical schools of the first degree, until they have reached a stated age, and have passed an examination in elementary education."

VII. "That to each school should be attached a committee, chosen from the artisan and trading classes, whose duty it shall be to visit the schools, assist at the examina-

tions, and endeavour to provide the students with suitable occupations afterwards."

VIII. "That the programme of apprenticeship and professional schools shall be adapted by these committees to the special industries of the district."

IX. "That, at the end of the session, diplomas be given to those students who have passed the necessary examinations."

X. "That free travelling scholarships be offered annually to the most deserving students."

XI. "That evening classes be generally established."

These resolutions are so simple that they do not require much explanation or criticism. They amply recognise what is now universally admitted, that the municipality must bear part of the burden, and also join the State in assisting the future development and organisation of Technical Education. They recommend that the tradesman and artisan should have a voice in the control of the schools required, and that the special industries of a district should be encouraged therein.

The suggestions relating to primary schools will be better appreciated by a reference to the most prominent defects in the English elementary system. These are :—

1. Drawing and Natural Science inadequately taught.
2. Instruction in the use of tools seldom given.

Nothing can be more unsatisfactory than the one statement that drawing is only partially taught in about one-fourth of the schools of Great Britain. Whatever valid excuses may be assigned for this humiliating neglect, the importance of drawing must eventually force itself upon us, as it has done with other nations. The reasons are not by any means obscure. Drawing is the foundation of all constructive arts. It makes the hand and eye travel together, it is always useful, and often indispensable, it is a universal language that respects no diversity of tongue. While

instruction in the use of tools may be deferred until the end of primary school life, the teaching of drawing should begin at the earliest possible moment. On the continent, generally, it has been made compulsory, and is deemed quite as necessary as writing. All the earlier educational reformers, Goethe, Froebel, Pestalozzi, and Rousseau, insisted, times without number, on its beneficence, indeed on every form of object teaching from the infant kindergarten upwards. Michael Angelo compared drawing to a compass in the eye. It would be appropriate in these modern days to say that it was also a master-key to unlock many of the doors of Technical Education.

Mr. Woodward, of the St. Louis Manual Training School, believes that it is the birthright of every child to be taught three methods of expression.

1st. By the written, spoken, or printed word.

2nd. By the pencil or brush, using the various kinds of graphic art.

3rd. Through the instrumentality of tools and materials expressing concrete thoughts.

In some few English higher elementary or graded schools the principles of industrial education are taught, but this instruction is the exception instead of the rule. The proudest boast of the Athenian democracy was, that it gave unbounded play to individual character. Our current national system is scarcely calculated to produce a similar effect. The primary school years in England are too short and the system too mechanical, the curriculum is also overcrowded with literary matter. Until such specific subjects as drawing, modelling in clay, natural science, and manual instruction, can earn as much in money value for school managers as those already established, it is idle to expect industrial training to prosper in Elementary Schools. No abiding results can ensue so long as the teaching of these

subjects is not made compulsory. Special teachers should also be trained to demonstrate more worthily their greater utility. The technological training of teachers is too vast a matter upon which to generalise, but it should be borne in mind that an immense amount of care is bestowed by Continental Polytechnic Colleges, upon this pressing exigency of school life.

Before passing away from the epitomised resolutions emphasis may be given to the fact that, although apprenticeship schools are usually of a primary character abroad, they have not hitherto become so in England. This may be principally accounted for by noticing that Continental Institutions of this class are usually free, or the instruction offered therein is provided at the lowest possible cost. With us they are a luxury to be enjoyed mainly by those middle and upper classes who can afford to pay the comparatively higher fees charged. It is plain that the general body of the English artisan class have neither the time nor means to avail themselves of the limited amount of secondary instruction now offered in day apprenticeship schools. It will be readily inferred, therefore, why these schools partake of a secondary character, and why they differ fundamentally from the apprenticeship schools that have been founded in France and Germany. The difference will be more apparent by comparing the instruction offered in one of the best examples of a foreign apprenticeship school. The apprenticeship school of the Boulevard de la Villette, Paris, was erected at a cost of £50,000. In addition to a literary and scientific course following that of the Primary School, it gives a technical training in the material and processes of wood and iron, including manual exercise in both in the workshop. The complete course is three years. In the first the students devote six hours per day learning the nature and distribution of wood and iron. During the second

year they must pass six hours, and in the third year eight hours daily, in the workshop studying the actual construction of materials connected with the trade they propose to follow. The school is quite free, has a large attendance, and is most successful in training artisans to earn good wages as pattern-makers, engine-fitters, and general mechanics.

The more primary character of Continental apprenticeship schools can be traced in the numberless examples, which have sprung up in the remoter country districts of Austria and Germany. Many humble handicrafts, not dependent to any great extent on expensive machinery or a large amount of capital, have been either revived or extended by means of such schools, and with excellent results. There are, as yet, no institutions in England to correspond with them. The question as to the adoption of an apprenticeship school system is a vexed one. It cannot by any means be settled in the affirmative until a complete course of Technical Instruction has been agreed upon in its primary, secondary, and advanced aspects. On the one hand, the utility of Apprenticeship Schools for turning out more scientific and highly skilled workmen, cannot be overestimated. On the other, their cost is too great to allow of this particular form of training being applied to the masses. Modifications of a more economical character will probably be tried ere long, thereby obviating much of the useless drudgery which apprentices undergo when commencing manual work.

It would serve no beneficial purpose to proceed with further details of the Congress; of more value will it be to venture upon a short synopsis of Industrial Education in its entirety, including an elucidation of its recent developments. In this treatment new material, not hitherto accessible to the public, may be drawn from the reports placed at the disposal of the Congress, which, being authoritative and in some instances official, merit the closest attention.

The growth of Technical Education has recently been rapid and enormous. It has virtually become differentiated in the following manner :—

1.—Scientific.

2.—Industrial.

3.—Commercial.

All having their primary, secondary, and advanced stages.

In surveying the position of Industrial Education, reference to its agricultural aspect must be omitted for the reason, that I have not been able to give it the consideration which it deserves.

Most of you will have observed the increasing interest taken in the general subject of Technical Education. Even casual readers have recently been able to form some slight idea of its aspirations. A stronger desire has also been evinced on the part of its special disciples for a scientific definition of the words "Technical Education." It must be admitted that many of the explanations which have appeared have tended rather to make confusion worse confounded than to give a clear notion of its actual meaning. After careful examination of the expositions offered by several writers it would seem that nothing better or more simple can be arrived at, or be put in fewer words than this :—

*Technical Education is that which gives expertness in the principles underlying trades or professions.*

Naturally it has a place in that wider instruction necessary for the welfare of all. It follows then that an education which strives to draw out the intelligence of a people generally must be antecedent to that which is meant to provide for their individual needs and capacities. Plato had such an exalted conception of the State that in his "Republic" he declares that the qualification necessary for full citizenship can only be acquired by a scheme of education so liberal as to include a Technical training. In Continental cities it is

obvious that the chief concern has been how best to work out such a scheme with the greatest perfection, how most perfectly to adapt it to local wants and make it diffusive as well as continuous. The effects are self-evident. A higher culture—a more intense love for learning—a patient, persevering, and scientific spirit—all of which have successfully invaded every domain of human activity.

Carlyle has well said that "genius is only an infinite capacity for taking pains," and you will remember that Sir Isaac Newton attributed the difference between himself and other men mainly to his own patience. How extensively and elaborately Germany and Switzerland have illustrated this capacity in education, and how partial, so far, has been its development in England, are now matters of history. We shall scarcely be free from invidious comparison until the legislation for, and administration of, such vital questions is freed from the exigencies of party politics and rival factions. Parliament has yet to acknowledge, by deeds rather than words, that education is much too serious an obligation to be dealt with by those who possess neither singleness of aim nor purity of purpose. Has it not long been conceded that a permanent Minister of Education can alone supply the strength and impart the courage needed to initiate, and carry forward, reforms? Were further confirmation called for, it is to be found in a recent speech by Sir W. Hart Dyke. This gentleman candidly admitted that he had wished in the Technical Instruction Bill to give a proper definition as to what was to be deemed a technical institution, but that if he had made the attempt he believed the Bill would have been laughed out of the House of Commons. Now, imagine a Minister of Education who is so sensitive of the praise or blame of Parliament that he dare not array with an external garb the figure he has called into life, or even give it a name. And also consider that it is his only justification for the

introduction of a bill which can but be compared to the play of "Hamlet" without the "Prince of Denmark." This will appear more forcibly when we undertake a further examination of its details by and by. If this incident fails to strengthen, nothing hereafter will strengthen, the contention for a permanent Minister of Education whose sense of duty will not be weakened by the disapproval of the House of Commons.

#### PRIMARY INDUSTRIAL EDUCATION.

The first, indeed the great difficulty, that confronts us, is that Primary Industrial Education has no organised existence in our national elementary system. Before the deficiency can be supplied it is certain that either the present curriculum must be redistributed and amended, or the average period of compulsory attendance increased. In Germany and Switzerland there are more years in the school life and more hours in the school day. Not only is this so, but the compulsory attendance period begins later and lasts longer than with us. In Saxony and some parts of Germany it commences at six and does not end until thirteen and fourteen years of age. In these and other Continental districts where the elementary school is abandoned at the ages of twelve, thirteen, or fourteen years, the law demands further attendance at a continuation school for two or three years. In England compulsory attendance begins at the age of five and total exemption may generally be claimed after the fifth standard is passed. To give a distinct idea of what this means, it may be noted that the average total exemption period for the whole of England is under twelve years. Moreover, a child may, as a rule, become a "half-timer" and seek manual employment after passing the fourth standard. The principle adopted abroad is that the boy or girl must, under any circumstances, pass a certain number of years at a

primary school giving sound instruction. In this country the test is more mechanical. It is easy, but not elastic. Numberless children in the manufacturing districts earn their livelihood as "half-timers" at the immature age of ten. Another year usually suffices to pass the necessary fifth standard, when they are absolutely free to engage in any occupation every day of the week, from morning till night. The Royal Commission of 1881 recommended that no child be allowed to work half-time under the age of fourteen years unless the fifth standard be gained. What advantage can come from a suggestion so important, unless prolonged attendance be afterwards required at a continuation school? Few would be disposed to affirm that the education of any human being, however low in the social scale, is sufficiently advanced to allow of daily manual work being begun at the age of ten; or that such instruction can possibly be completed a year later. Yet we have reliable statistics proving that only thirteen per cent. of the London School Board children are over the age of twelve years.

Herbert Spencer, in his excellent work on "Education," contends that, "to prepare us for a complete living is the function which education has to discharge, and the only rational mode of judging of an educational course is to judge in what degree it discharges such functions." It scarcely demands a second thought to discern that the system in vogue does not make any attempt to prepare the artisan class for this complete living. Nay, it offers them not the smallest fragments of industrial training, nor fits them with further instruction for the great function of their lives. In another passage the same writer argues with extreme force, that it is a mistake to assume that the mere acquisition of knowledge is all important, of much greater work is the organisation of knowledge. He also carries this statement to a logical conclusion by showing that our industries would cease were it

not for the information which men gain after their education is said to be finished. Tennyson has briefly expressed the same ideas in the poetic words:—

“Knowledge comes, but wisdom lingers.”

Nothing so pertinent as this has been written since Solomon observed that, “Wisdom is the principal thing; therefore get wisdom, and with all thy getting get understanding.” It is patent, therefore, that this wisdom can only proceed from the proper and effective organisation of knowledge, and that both are a paramount desideratum in the welfare of the artisan classes. Are not the authorities quoted sufficient to justify the assertion that no amount of theoretical instruction can of itself produce the wisdom required, much less promote industrial success? Is there any wisdom in a national elementary system which makes such small provision for industrial training? To show the difficulty that lies in the way of providing this great need the Chairman of the London School Board relates that the attempt, which his Board had made in the metropolis, to teach all the boys the use of tools, had not met with much encouragement from the higher authorities. He adds that the Auditor of the Local Government Board had surcharged them for the slight expense which they had incurred in providing wood for the experiment. The Chairman, in his Arcadian simplicity, took it for granted that the Government would confirm the action of his Board in their praiseworthy attempt to introduce manual training. You will notice that he was quite mistaken in this view of the subject. It is pleasant to observe, however, the difference in the growing spirit of the age in this matter when not held down in the bonds of red tape. The City and Guilds’ Institute have made a genuine experiment to link on the primary education of the artisan to his future calling by providing the London

School Board with the sum of £1,000 to equip and maintain for one year four schools of elementary technical instruction, to be established in the premises of the Board, under the supervision of a joint-committee.

Before leaving this interesting phase of primary industrial education, do not let us forget that by far the largest proportion of those who require it have to begin to earn their livelihood at the earliest possible age. Bearing in mind this exceptional difficulty, its absolute requirements may be limited to two :—

1. *Manual training in Primary Schools.*

2. *Secondary instruction in Evening Classes.*

Both of which should be made compulsory. Sir Philip Magnus, in his excellent pamphlet on "Manual Training," has illustrated the numerous advantages of this study of things as collateral with the study of words. He shows most ably that the object of workshop instruction, as part of general education, is not to teach a boy a trade but to develop his faculties, to give him manual skill, to familiarise him with the properties of such common substances as wood and iron, to teach the hand and eye to work in union, to accustom the pupil to exact measurement, and to enable him, by the use of tools, to produce things from drawings which represent them. He also asserts his belief that this alternative instruction in the principles of handicrafts will extend the area of knowledge while exercising usefully the faculties of the children and give them manual skill. Professor Ripper has demonstrated that manual training will provide the connecting link between the theory of the school and the practice of the workshop, between books and tools, and between abstract rules and phrases, and the reality of things. It will teach the dignity of labour by example rather than by precept.

## SECONDARY INDUSTRIAL EDUCATION.

In passing on to the next division, the first thought that occurs to us is, that the middle classes of almost every nationality consist of those moderately well-to-do citizens, who have the means in addition to the desire, to allow their children to remain at school for two or three years after receiving a course of primary education. For such, an intermediate instruction should be provided of a somewhat varied character.

Many Continental Schools offer general secondary Technical Instruction and are often affiliated with the apprenticeship school, as is the case in England.

It is, however, to the special schools that we must look for future encouragement and support. In France, Germany, Austria, and Belgium, many highly organised trade schools exist for the specific teaching of weaving, dyeing, mining, engineering, building-construction, and industrial art. Some are of a mixed order and combine several industries, but the later tendency on the Continent is for such institutions to devote themselves entirely to the individual trades of their separate localities.

The *Ecole Professionnelle Municipale* of Rheims is perhaps the best style of a mixed secondary school; the students enter at thirteen for a three years' course. They are drawn from the primary school, or may be received after passing an entrance examination of an elementary nature. The first two years all undergo the same practical and theoretical training. In the third year they are classified, and their particular aptitude must then concentrate itself in mechanics, weaving and dyeing, agriculture or commerce. During the last year the student must pass eighteen hours per week in the workshop. The French schools of this class are much

to be commended, and exhibit traits well worthy of consideration, if not imitation.

The special trade schools of the Continent are very numerous. They have been erected and equipped at enormous cost, the Germans and French being pre-eminent in their establishment. The weaving and dyeing schools of Crefeld, Chemnitz, Roubaix, and Vervier are of world-wide fame. Students are usually admitted at fourteen for a theoretical and practical course extending over two years, and they are taught, with the utmost exactitude, everything appertaining to these powerful industries. The building trade schools of Stuttgart and Dresden are the best illustrations of another kind. They are not apprenticeship schools nor is any workshop instruction given. Their object is to supplement the practical training of those engaged in the various branches of the building trade. The mechanical engineering school of KomotEAU in Austria may be noticed as a third form of a foreign secondary industrial institution. Students commence at fourteen or upwards. For two years theoretical instruction is from eight to twelve, and practice in the workshop one to six daily. The literary work is mainly directed to the needs of a skilled mechanic. Not by any means the least important is the last example that may be adduced. The industrial art schools abroad have no prototypes in England or France, where the chief anxiety has been to teach only pure art. At Munich, Nuremberg, Dresden, Berlin, and Vienna, applied art in its relation to industry has been fostered to an extraordinary degree. The results may be seen in the creation of an extensive means of livelihood for large numbers of the middle and lower classes in many subordinate trades in which art is reproduced in a hundred forms, its constituent elements being extreme cheapness of cost and infinite variety of taste. The usefulness of design has not been sufficiently recognised in England. The merest shred of comfort in this

connexion is the knowledge that we do not purchase so extensively as formerly the patterns and decorative ideas of our French neighbours, and that owing to private enterprise and generosity a few industrial art schools have recently sprung up.

The Finsbury Technical College is probably the one public institution that, as yet, provides instruction for the artisan classes of England in reproductive decorative art as applied to metal work. We have still to appreciate that there is a profitable field before us in industrial art. Design in its relation to textile fabrics already receives increased attention. Its further application towards decorative painting and ornament of all sorts, modelling, particularly as regards the numerous forms of ceramics, wood carving and turning, metal chasing, electrotype founding, lithography, and colour printing, would furnish fresh avenues of steady employment for millions of our population, whose existence and demands for a decent livelihood cannot long be ignored by the State with safety.

There is an exceedingly wide diffusion of taste, skill, and idea, in the small industries of the Continent. A glance at our own shop windows, as Christmastide approaches, reveals the extent of the German and Swiss artistic productions that are yearly imported. Many village communities abroad thrive by the manufacture of numerous forms of industrial art. A lesson we have still to learn, but a lesson worth the learning, is that we have barely commenced our career as artistic manufacturers of all except the more expensive commodities. A single notable exception to the neglect of industrial art in village communities may be found in the recent development of the chair trade in the town and district of Wycombe, in Buckinghamshire. Entirely confined formerly to the making of the cheapest and most primitive forms of chairs from native timber, during the past few years art

has successfully been allied to their work. These intelligent and active people have perceived the advantage of introducing some of the more costly and beautiful foreign woods, and have also adorned their materials with ornamental designs of the choicest character. Instead of the crude and commonplace articles once made may be seen the best productions of ebonized, enamelled, bronzed, and silvered work. They have also availed themselves of recent modern colours as an attractive covering for the wood which constitutes the frames and the straw which, in many cases, forms the seats. In consequence of this enterprising spirit countless numbers of chairs of great elegance and comfort are now supplied to the majority of the retail trade of Great Britain. Their industry has been helped again by the addition of general artistic cabinet work, at a reduction in cost which would have been thought impossible a few years ago.

Just seventy years since, William Roscoe, in an opening address, in this building, told his hearers that it was not merely on industry, but on its proper application to the nature, situation, and products of a country that its prosperity depended. Art, in its application to industry, is no exception to the principle enunciated by this illustrious citizen of Liverpool. Would not its further encouragement in village communities check the continued transference of population from rural to urban districts, and would it not prevent the rush of the industrial army into large towns and cities where the surroundings are often both unhealthy and demoralizing?

#### ADVANCED INDUSTRIAL EDUCATION.

It will be perceived that a third and last solution of industrial education is needed for those, who not only have the desire, and are able to provide the means, but who can also give whatever time is required for perfecting their Technical

**Training.** The standard for this higher instruction must be liberal and comprehensive, and ought to provide facilities for several classes of students. In the first place, every large centre should possess a college in which the Technical Training should be as complete as the classical training given in the older endowed schools. In the next place, it should meet the necessities of those who intend to be professors or experts in industrial science. It should maintain accommodation for the supply of suitable teachers for primary and secondary schools. It should also offer the special training necessary for those who purpose devoting themselves to manufacturing industry, or commercial distribution. Such colleges would naturally be fewer in number, their curriculum more extended, and the fees much higher, than in the numerous secondary schools.

Foreign polytechnic colleges are large and commodious edifices, including, as a rule, special high schools of civil and mechanical engineering, chemistry, mining, architecture, agriculture, forestry, and commerce. They acknowledge that the application of science and the development of mechanical processes in the highest sense require prolonged thought and the most devoted diligence to carry them out to a successful issue. There is admittedly no necessity for us to imitate in number the technical high schools of the Continent. It is acknowledged that in Germany they are much in excess of their actual demand. This has arisen owing to circumstances which do not affect us. A growing evidence in England is that no justification exists for the establishment of separate polytechnic colleges. The majority of our Universities have taken, or are taking, steps to introduce Technical Education on an enlarged scale, and thus give a more practical side to their curriculum. We have seen the Yorkshire Technical College lately affiliated to Victoria University. University College, Liverpool, is also

busy erecting an engineering laboratory of the most complete and costly character. Professor Hele-Shaw is willing and anxious that it should be made to serve, in every possible respect, the purposes of a polytechnic school.

England being differently situated to other Western nations, it will, happily, not be necessary to imitate their extensive and costly modes of advanced instruction. The Central Institute at South Kensington will doubtless fully provide for the higher training of teachers in all technological subjects. It will further act as a Metropolitan University, with which all other kindred institutions will be connected, and, by a complete system of examinations, establish degrees for formally recognising the position of those students who wish to gain them as diplomas of proficiency. It must rest, however, with individual municipalities to decide as to what is the best general preparation for those who intend to take the highest positions of an industrial career. The training of manufacturers, as well as managers and foremen of various industrial establishments, in a sound knowledge of scientific principles, assimilated with the practical illustration of the workshop, must be duly provided for. At the moment it is difficult to foreshadow how these several combinations will be effected. In some instances the theoretical training will have to be completed at an earlier age than in others, and a greater attention paid to the scientific instruction of the workshop. In others it will be imperative that theoretical knowledge and scientific training be concurrent, a consideration of supreme importance to the electrical and mechanical engineer, the metallurgical chemist, and the chemical manufacturer. Let us hope that time will quickly confirm the desirability of all modern Universities, in any case adapting themselves to the practical claims of their localities, and that neither money nor educational power will be wasted in building separate technological high schools in the provinces.

Technical Education, after all, is merely one branch of national instruction. Its principal object should be that of directing into the channels of industry all the intelligence derived from a more extended literary and scientific training. If it can be organised to supply this deficiency, especially as regards primary and secondary instruction, much will be accomplished towards immediate relief. The tendency of most nations may be seen in a marked resolve to make all education more practical. Complete consummation with respect to elementary and intermediate institutions can only be achieved by causing them to be easily accessible, attendance at them compulsory and continuous, and the education, either free, or at the lowest possible cost. Polytechnic colleges will never naturally be bound by such strict conditions. Their aim must be to hasten the progress and improve the development of scientific and artistic industry. Professor Payne, in his "Contributions to the Science of Education," explains, that, in the main, manual dexterities are easy of attainment. They involve a low order of knowledge, and constitute an art which is solely empirical. He also demonstrates that the principles which underlie processes are of a much higher order, and that the knowledge required for a profession is rational or scientific. We may put this more simply by saying practical utility must be the distinguishing feature of the primary and secondary school, and scientific culture that of the advanced college.

Before concluding this imperfect summary we must notice that the majority of the artisan classes will not require more than a primary and secondary industrial education. It is the few and not the many who will have the courage or determination to attain to a higher grade training, or who will have the pluck and perseverance of Brunel, the engineer, who at twelve was the match of trained carpenters, and pawned his hat to buy tools. The teaching of the principles

which underlie the bulk of handicraft trades should, from a national standpoint, reasonably complete the education which it is desirable the State be called upon to supply to the industrial classes. Would not such instruction fairly enable all to rise *to* and *not above* their natural position in society, as well as facilitate the earning of a sufficient livelihood?

The greatest distinction between the English and the Continental method is, that abroad education is more gradual, more natural, and more rational. Matthew Arnold has put this incisively in his last Report, and has also shown that this slower rate of advance is compensated for by the progressive thoroughness of the teaching and the hold that is gained upon the matter of study. English ideas of the science of education have hitherto been too cramped and limited. Legislation has not anticipated that particular form of instruction which three-fourths of the population require. The Parliamentary machine declines to move until an immense amount of force is concentrated against it. Although the subject of Technical Education has been crying loudly for national recognition during the past few years, no relief has been granted, or attempted until the present year.

#### THE TECHNICAL INSTRUCTION BILL.

The recent introduction of the Technical Instruction Bill cannot be overlooked. Its withdrawal was timely and fortunate. The proposed measure bore traces of hasty preparation; its principal fault being that it was partial and permissive. It was partial because the children whose parents could not afford to pay the extra fees would not be allowed to avail themselves of its privileges. Only those children who had passed the sixth standard were eligible. As only an exceedingly small proportion ever do pass the sixth standard, the Act would have been quite useless in its

main purpose. It was permissive because municipalities could please themselves as to its adoption. Had the subject been in an experimental stage the Bill might have proved acceptable as an instalment; but, having by common consent passed out of this category long ago, a more effective and compulsory measure was needed. If carried it would have done nothing for either primary or advanced Technical Education. Instead of commencing with A, it began with the later letters of the alphabet, and left the preceding ones in the cold altogether. Plainly it would have introduced secondary Technical Instruction on a larger scale, and have allowed, not *compelled*, municipalities to have diffused it in all large centres principally at their own expense. Its withdrawal is happily being made the occasion for the meeting together in conference, during the present recess, of educationists of all grades, to consider such revision and extension as is necessary to meet the requirements of the country at large.

It may be safely asserted that no amendments can convert such a Bill into a satisfactory measure, which do not make proper provision for primary industrial instruction, and which fail to recognise this and the establishment of compulsory evening classes under suitable conditions, to be the greatest essentials. There is abundant evidence showing why the State cannot be expected to bear the entire cost of secondary industrial instruction. On the other hand there is much to confirm the wisdom of the following in the footsteps of our continental neighbours in the organisation of compulsory continuation schools. Such an incorporation would involve little additional expense. It would not require the erection of any new buildings. The working classes would be compelled, after leaving a day primary school, to further attend so many evenings in each week until they had either attained a given age or passed a certain standard of instruction. To

allow them to pass out of an elementary school unrestricted at an average age between eleven and twelve years with the poorest smattering of undigested knowledge, and to delude ourselves that they will become intelligent or respectable handicraftsmen is the personification of folly. If it be nothing more, is it not the neglect of a training which is the basis of prosperity to all large nations, the majority of whose people can only earn their livelihood by practical industries?

Probably the most unsatisfactory feature of the late Bill was that it gave no definition of what was meant by the term Technical Instruction, nor was it evident whether the syllabuses of existing voluntary institutions were to be included in its provision. It was also a serious possibility that if its control had been left solely to the Science and Art Department, as suggested, some trades would not have been eligible, under any circumstances, to earn grants; direct applications of Chemistry to Industrial Art being not yet recognised by this body. Moreover, it was not clear that the Science and Art Department would continue their payment on results in the event of the technical school receiving no aid from the local authority. It appears to be imperative that a future measure should show distinctly that every local centre is empowered to organise and carry out its own scheme of Technical Instruction, subject, of course, to the supervision of Government Authority. Further, such an Act should effectively bridge over the present gulf between the Board School and the Technical Institution, and should not be subject to the caprice of any fifty ratepayers. In this manner only can the special trades and particular needs of individual localities be adequately provided for.

According to the 1881 census, 74 per cent. of the population were engaged in productive or distributive industries. These returns also show that, during the preceding thirty

years, the proportion had gradually changed from half agricultural and half manufacturing, until in 1881 those occupied in manufacture were double those who live by agriculture. In the period referred to, 1851-1881, eight and a half millions of people came into existence for whom fresh means of livelihood had to be found. The process of change in this direction still goes on and the population is rapidly increasing. As we do not grow all the food we require this aspect alone must become an alarming one. At the present rate of increase of population, the nation will double itself in fifty years. Seventy millions of people will require to import food to the value of £400,000,000. Sir John Lubbock has forcibly observed, in his new book on the "Pleasures of Life," that it will become a choice between science and suffering. There will, probably, be more of the suffering than of the science, unless a better solution of the industrial question be reached in the meantime. Thoughtful men cannot help observing that every step in civilization makes us work with sharper tools. According to an eastern proverb calamities sent by heaven may be avoided, but from those which we bring on ourselves there is no escape. It would be idle to contend that Technical Education is the only factor in the future industrial prosperity of England, at the same time it must be admitted that prompt and well-directed legislation can assist the process materially, and by giving the desired impetus to industry, at least avert some of the evils of over-population.

#### THE NATIONAL ASSOCIATION.

The last portion of the subject which may be brought forward is the formation of a National Association for the promotion of Technical Education, under influential as well as representative support. This new movement has the help and good will of many members of Parliament and prominent

Educationists, its principal objects being the encouragement of Educational Reform in our national system, by giving it a more practical direction. It will strive to do this by the following among other means :—

(a) "The promotion in our primary schools of the better training of the hand and eye, by improved instruction in drawing, in the elements of science, and the elementary use of tools."

(b) "The introduction of such changes, in the present system of primary instruction, as may be necessary to enable children to take advantage of technical teaching."

(c) "The more extended provision of higher elementary schools where Technical Education may be provided for those who are fit to take advantage of it."

(d) "The reform of the present system of evening classes, with special provision for the encouragement of technical (including commercial and agricultural) instruction."

(e) "The development, organisation, and maintenance, of a system of secondary education throughout the country, with a view to placing the higher Technical Education in our schools and colleges on a better footing."

(f) "The improvement of the training of teachers, so that they may take an effective part in the work which the Association desires to forward."

These suggestions cover the entire ground of Industrial Education. They contain nothing which the most scrupulous or sensitive citizen can consider unnecessary for the welfare of the artisan classes, nor do they aim at offering the majority of our population a higher or more costly instruction than their position warrants from a social point of view. The Association will endeavour to be the medium of collecting and diffusing in a popular form a large mass of useful information and statistics bearing upon the subject. In

the ways enumerated, as well as by the formation of branch associations in all large centres, it intends to influence public opinion, to guide legislation, and to assist the organisation of Industrial Education in every locality. The pleasures of hope certainly attend its birth. England enjoys many natural advantages not given to other nations. An unrivalled geographical position, a splendid working climate, a vigorous and hardy people, and an international commerce which it has taken centuries to establish. Here are the elements of fear as well as of hope. The fear may be banished by the realisation of a renewed prosperity if our country quickly resolves that the industrial classes shall, during the period of their youth, have a more practical training. When this be granted they will swiftly learn that the conditions of complete preparation for the greater functions of their manhood are those which our Poet Laureate has so nobly expressed :—

“ Self-knowledge, self-reverence, self-control,  
These three alone lead life to sovereign power.”

## ON SOME CURIOSITIES OF ENGLISH COINAGE.

BY J. BIRKBECK NEVINS, M.D., LOND.

## ANCIENT BRITISH COINS.

IN speaking of "Curiosities of English Coinage," the expression must be understood as embracing also a period anterior to that in which this Island was first called England, and a coinage prehistoric in its date, viz: that of the Britons, before the advent of the Romans. We are so much accustomed from early education to think of the Ancient Britons as a semi-savage, half-naked race of painted brave barbarians, that we are scarcely able to realise the amount of artistic culture, and the extent of commerce and foreign relations, that are revealed by the large amount of *gold* as well as silver coins which has been discovered in various parts of the country, extending from Kent to Somersetshire in the south, and as far as Yorkshire to the north. These coins are now established beyond doubt to have been genuinely British, and not to have been imported from Gaul or elsewhere, and their definite characteristics are so well marked as to leave no doubt in the minds of the best informed numismatists that they were issued from several different centres (probably six), representing the dominions of as many independent sovereignties, each possessing the wealth and intellectual culture necessary for such an advanced state of civilization as the issue of *gold*, silver, and copper or bronze coinage. This was marked in multitudes of cases with the name of the sovereign ruling over the

district, and possesses such features of artistic merit as are exhibited in the illustrations of this paper.\*

The existence and circulation of such an amount of *gold* currency is the more surprising when we bear in mind the remarkable fact that, with the exception of a few Greek coins issued perhaps as late as the 9th or 10th century, and also a few issued by the Norman Dukes of Apulia and Sicily, about 1150, there was no *gold* coinage in *Europe* after the fall of the Roman Empire until the middle of the thirteenth century (1252), when a small gold coin was issued in Florence, and therefore called a florin; and that even in the reign of Henry III of England, this country could not support a gold currency of the value of twenty silver pennies only, and he was obliged to call it in almost immediately as being beyond the capacity of the country. It was not until the reign of Edward III (1348) that England was rich enough and sufficiently advanced in commerce to have a gold currency; yet the Britons, 150 years B.C. (i.e. fifteen hundred years previously), had a gold coinage of which above a hundred different forms are still in existence, and so distinct in their designs that they occupy many pages of plates in Evans's *Coins of the Ancient Britons*.

Another circumstance of interest in the British coinage is the typical character which runs through it in a most marked and curious manner. In the earliest historic period of which we have a record of monetary transactions, viz., the purchase by Abraham of the field of Mamre, about 2000 B.C., the field was bought for such and such a *weight* of silver, and it was not until many centuries afterwards, so far as numismatists are aware, that the idea suggested itself

\* Some of these illustrations are drawn from Mr. Evans's exhaustive and most interesting book, *The Coins of the Ancient Britons*, which contains twenty-five sheets with about 350 engravings of distinct British coins, a large proportion of them being gold pieces.

of taking actual portions of gold or silver, and marking them in such a manner as to render them accredited representatives, both of the weight of the valuable metal and of its purity, so that they might pass from hand to hand without the necessity for weighing or testing in each transaction. According to Herodotus, the Lydians, about 800 B.C., were the first nation to introduce gold and silver coins, but their priority is disputed by Strabo and other ancient historians, who assert that Pheidon, King of Argos, first struck *silver* coins in the island of Ægina, nearly 900 years B.C., or about one hundred years *after* the time of Solomon. Judging from the coins themselves, it would appear that the silver coinage of the Æginetans was the most ancient; that the gold coinage of the Lydians followed about a century afterwards; and that the next in point of antiquity are the Persian coins of Darius, three hundred years later still, about 500 B.C. The first allusion to distinct Jewish coins is in the first Book of Maccabees xv, 6, in which the treaty with Antiochus VII conferred upon Simon Maccabæus the right to issue coins with his own stamp upon them.

But the question arises, "What authority at those dates was so strong and generally acknowledged as to carry conviction that the pieces of metal issued under its sanction were really of the weight and purity claimed for them?" And the answer has a bearing upon the "type" adopted by the Britons in their coinage. A belief in the presence and the powers of a divinity or divinities was universal at that period of the world, and it was the one supreme authority universally acknowledged. These small portions of metal were therefore in every case stamped with the emblem of the supreme divinity of the place whence they issued, and this sacred emblem was the guarantee of the purity and weight of the coin. Accordingly all the ancient coinage is stamped either with the effigy of the god, *e.g.*, the head of

Apollo; or, with the emblem of the divinity, *e.g.*, the tortoise, the emblem of Venus; and in many cases the sacred character attached to coins was still further marked by their being issued from the temples, and coined by the priests, the ministers of those supreme powers. It was not for five hundred years afterwards, or until after the death of Alexander the Great (about 300 B.C.) that the practice slowly crept in of placing the effigy of a mortal upon the coin, instead of an immortal, and the change appears to have been felt as a sacrilege when first introduced, and slowly extended. In accordance with this deep-seated homage to the divine powers, Philip of Macedon, who raised the Greek coinage to its highest pitch of artistic beauty, impressed all his coinage with a divine emblem, very generally with the head of Apollo—the sun god, radiant with his flowing locks—on the obverse of the coin, and his chariot with rampant horses—the chariot of the sun—upon the reverse.

This design, often called the Macedonian or Greek type (Plate I, Fig. 1), was the one adopted by the British king who first issued a gold coinage, and the imperfect reproduction of it shewn in Pl. I, Fig. 2, is believed to be one of the oldest British coins known (Evans). The intercourse between Britain and Gaul, and with other nations through Gaul, and the trade carried on for centuries in tin and other metals sent from Britain to the Mediterranean and Phœnician ports, accounts naturally for the Greek coinage, rather than the Roman, being known to the Britons at this early date, and this coin, which is undoubtedly British, was probably coined about 150 or 200 years B.C. There are no dates upon the coins of that period, nor on the English coinage for nearly eighteen hundred years afterwards, and it is curious and interesting to follow Mr. Evans in the process by which he arrives at the conclusion, and carries his reader with him,



Fig. 1.

Philippus, Macedonia type. Page 288.



Fig. 6.

Roman Coin, Antoninus Pius, original of "Britannia." Page 290.

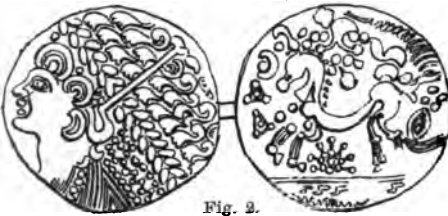


Fig. 2.

Most Ancient British Gold Coin. Page 288.

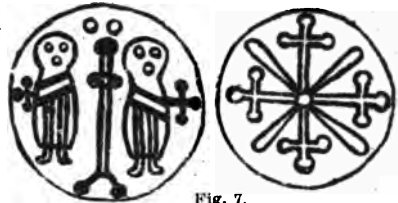


Fig. 7.

Scattæ. Page 291.

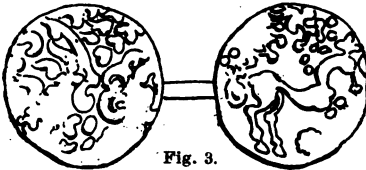


Fig. 3.

Debased British Gold Coin. Page 289.

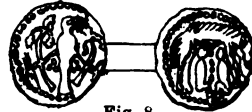


Fig. 8.

Bird, and Wolf and Twins. Page 291.



Fig. 4.

Most Debased British Coin. Page 289.



Fig. 9.

Saxon Silver Penny, Ethelberht. Page 292.

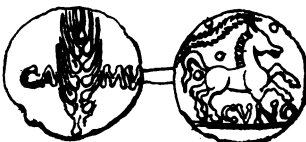


Fig. 5.

Cunobeline, Chariot and Ear of Barley. Page 290.



Fig. 10.

William the Conqueror. Silver Penny. Page 293.



that this first coin was issued about the date above mentioned. Whether it was a foreign or a native engraver who made the die for this and subsequent British coins, cannot be settled with absolute certainty, but the Britons being skilled in metal work, the probability is that it was native artists who copied one from another with continually lessening perfection, as they became more distant from the original model, until, at length, the flowing locks and the beautiful face of the Greek Apollo have become barely traceable in Fig. 3, Pl. I, and the chariot and horses of Philip have evolved, by gradual degradation, into the single wheel and the apology for a horse shewn in that coin, and have at length survived only in the form of Fig. 4, Pl. I. Still, in hundreds of the coins engraved in Mr. Evans's work, the Apollo head and the horse can be traced unmistakeably, and prove to demonstration that the Greek coinage was the original from which the Britons took their copy.

Previous to the invasion by Julius Cæsar, the British coinage was almost, if not entirely, after the Greek type, and was without inscriptions; but after the Romans had gained a footing in the island, their influence began gradually to prevail, and the coins began to have Roman designs, such as unquestionable Roman heads, instead of Greek ones, and other Roman characteristics, and especially inscriptions in Roman, not in Greek letters. It is probable, also, that Roman engravers were sometimes employed to make the dies, for in the case of one British sovereign, at any rate, about 80 B.C. (Cunobilene, the Cymbeline of Shakespeare's play), the coinage was raised to a high pitch of artistic beauty, and his name, more or less contracted—CVN, CVNO, CVNOB, etc., and also the place whence the coins were issued, CAMV (Camulodunum, Colchester, or Walden, in Essex)—are always in Roman letters. One of the most beautiful of his gold coins, now in the British Museum,

is shewn in Fig. 5, Pl. I, which still retains the rampant horse, and a circle, as the representative of the wheel of the Greek chariot, on one side, and, on the other, an ear of bearded barley, which is thought to have been introduced as an emblem of the fertility of his kingdom of Essex, Cambridgeshire, and Berkshire (Hawkins). From this time, the influence of Rome became increasingly manifest, and the distinctively British coinage dropped away.

#### ROMAN PERIOD.

The period during which the Roman influence was supreme in Britain, and its coinage superseded that of the Ancient Britons, calls for little notice here in a paper on curiosities of English coinage, except to allude to some of the Roman coins having had Britannia, or some other form of Britain, upon them, of which the coins of the Emperor Antoninus Pius (Pl. I, Fig. 6) are examples. He was at one time commander in Britain, and this coin has his profile on the obverse, and, on the reverse, a seated figure of Minerva, and the legend "Britannia," which were adopted fifteen hundred years afterwards for the English copper coinage, and are still in daily use upon our bronze money.

#### SAXON PERIOD (SCÆATTÆ).

After the Romans left Britain, the ancient British coinage was not restored, but the various invading tribes who came to England under the general name of Saxons brought a rude silver coinage with them which has been called "Scæattæ,"\* and is illustrated by Figs. 7 and 8. They are very rough, and generally inartistic, and have evidently taken Roman, not Greek coins as their models, for the heads are Roman, and the wolf suckling the twins

\* "Scæat—portion, piece"; "Scæatt—money."—Ainsworth's *Anglo-Saxon Dictionary*.

(Pl. I, Fig. 8) is a favourite design upon Roman coins. But "many of the designs seem perfectly original, and far outnumber the *types* taken from any other source, and as they are probably earlier than most of the Saxon and Irish MSS., the interest which belongs to them is very great. Many consist of some fantastic bird or animal, similar to the animals which appear in such profusion in the Saxon manuscripts"\* (Pl. I, Fig. 8). The rude representation of two ecclesiastics (Pl. I, Fig. 7) and the cross bear evidence of an acquaintance with Christianity in the authors of these coins.

The inscriptions upon them are either in Runic (Scandinavian) or in Roman characters; and with the exception of three or four doubtful coins, there does not appear to have been a gold issue. They are spoken of as "*Sceattæ*" in ancient Saxon laws; but in such a manner as to show that they were of less value than the "penny," either Roman or Saxon, which is in accordance with their inferior weight.

#### GENUINE SAXON COINAGE.

The extent of the *silver* coinage of the Saxons was far beyond the popular impression, and although it is generally very inartistic and devoid of beauty, much of it will still bear favorable comparison with the Norman coinage, even so late as the time of John. There is no known gold coinage which is unquestionably Saxon; but a few gold pieces called "*Trientes*," weighing about twenty grains each, were coined in Gaul during the Merovingian period (418 to 752 A.D.), and have been found in some rare instances in England; and there are three or four gold coins of doubtful origin (Kenyon).

A very marked feature of the Saxon coins is the pre-

\* *Coins and Medals*, by the authors of the *British Museum Official Catalogue*, p. 104.





sence of a small well executed cross in the centre of the reverse, surrounded by a well engraved inscription usually in Roman characters. Above one hundred and sixty different Saxon silver coins are engraved in Hawkins's *Silver Coinage of England*, and they represent money issued by not less than forty-eight kings of the various Saxon kingdoms of England before they were united under Egbert; by eight Archbishops of Canterbury, and three Archbishops of York; by nineteen Kings of the whole of England; and they include coins bearing the names of five saints (St. Peter and others).

The names, and frequently the portraits, of the various kings are on the obverse, and are in large letters, easily decipherable (Pl. I, Fig. 9), and on the reverse is frequently the name of the mint from which the money was issued, or that of the minter, in letters as large as those of the king. At least thirty-two places of mintage are recorded upon the coins of Egbert, and sixty-two on those of Edward the Confessor. The coins vary somewhat in weight, but they all represent approximately the silver penny—the Denarius of the Romans—and appear to have been intended to be the equivalent of that coin in value. The features which specially characterise them are their regularly circular form, their approximate uniformity of size and weight, the presence of a monarch's head on one side, and of some Roman emblem (*e.g.*, the Wolf and Twins, Fig. 9, Pl. I), or, more frequently, the presence of the Christian cross on the reverse. This emblem of the Saxon belief is present in more than a hundred of the Saxon coins figured in Hawkins's *Silver Coinage of England*.

#### NORMAN COINAGE TO THE PRESENT

The Norman Conquest made but little change in the currency, for the money which W

issued consisted solely of silver pennies, which, in weight and intrinsic value, approximately resembled the Saxon coins. His own effigy and name were upon the obverse of the coin, instead of those of his predecessors, and the cross was upon the reverse of *all* his money instead of some of it only. But the feature of most curiosity and interest is the mode of spelling his name, which always begins with PILL (Pl. I, Fig. 10), and is completed as Pillelm, or Pillem, and in one or two cases as Pillelmus, with a Roman termination. REX follows in every case, and, in one coin, the letters ANGLO also, as an abbreviation for Anglorum—king, not of England, the country, but of “the English,” the people. This difference of title appears to have possessed little importance in his eyes, for whatever he might call himself upon his coins none ventured to dispute his kingship in fact over the country.

It might almost seem as if the same half contemptuous or politic indifference to appearances influenced him in the spelling of his name, for the letter P, which he always used, was merely a form of the old Runic , the symbol for W. The old Runic letter, in various modified forms, is found continually upon the coins of the Saxon kings. Thus Beornwulf, King of Mercia, is spelt on his coins as BEORNVLF; Ethelward, King of East Anglia, ETHELPARD; Eadweard I, King of England, EADVVEARD; and Eadweard II, also King of England, EADEARD. Edward the Confessor is spelt EDPARD, EDA, and EDPER; while Wiglaf, King of Mercia, has VVIGLAF. William, the conquering Norman, may therefore have thought it worth while to humour the conquered Saxons by adopting the old Saxon mode of spelling his name, which cost him nothing while it might please them; at any rate, the Runic or Saxon P appears on his coins, but never occurs again. The coins of William II are indistinguishable from

those of William I; and William III and IV—(six and eight hundred years afterwards)—spelt their names on their coins with a G—Gulielmus.

The cross on the reverse of William's coins never extends from margin to margin, but is always surrounded by the inscription, which bears the name of the moneyers or the mint from which the money was issued. This cross, as an emblem of Christian belief, was retained on the English silver coinage in the form of a definite cross until the reign of Mary, who introduced it in all her *silver* coins previous to her marriage with Philip; but it is not present in any of those which bear the double portraits after her marriage. It reappears in several of Elizabeth's coins, but not in any of James's; and, with the exception of a single crown piece of Charles I, issued almost immediately after his accession, it disappears entirely from the English coinage. It is much less constantly present in the gold than in the silver coins of the various sovereigns.

The only coin issued by William was his silver penny, and in order to make *half*-pence the coin was simply broken in two, and to make *fourth*-things (farthings or "ferlings") for still smaller transactions, it was again broken into quarters, an operation that was much facilitated by the cross, which marked and assisted the division. In later reigns, it seems to have been found that a cross extending from margin to margin rendered this division still easier; and in the reign of Henry III the cross extended completely across the coin, and the small one of William was never restored. The rough edges and corners of the fractured portions however furnished an excuse for "clipping," under pretence of smoothing them; and to prevent this, Edward I coined *round half*-pence and farthings, or "ferlings," also. This event was commemorated (Stow) by the following rhyme:—

“ Edward did smite round penny, halfpenny, farthing,  
The crosse passes the bond of all throughout the ring;  
The king's side was his head, and his name written;  
The crosse side, what city it was incoyned and smitten.  
To poor man, ne to priest, the penny frayeses\* nothing.  
Men give God, ay, the least; they feast him with a farthing.  
A thousand, two hundred, four score years, and moe (A.D. 1280)  
On this money men wondered when it first began to goe.”

### MINTS.

We are so much in the habit of thinking of “the mint” as being in London, that we can scarcely realize the number of mints employed by some of our sovereigns. In the reign of William I, there were at least fifty-one mints employed in various parts of the country, and for centuries, the Archbishops of Canterbury and of York, and the Bishop of Durham had the privilege of coining *silver* money.

A mint was established in nearly every cathedral and important city in addition to London; and also, in addition to them, places which are now of such trifling importance as Cricklade, Guildford, Hythe, Maldon, Pevensey, Rhuddlan (near Rhyl), Sandwich, Totnes, and Wilton.

In Canute's time, when the country was still more unsettled, there were at least eighty-three mints.

By the time of Henry VIII, the mints had become limited to London, Canterbury, York, Durham, and Bristol, but the necessities of war obliged Charles I to coin money wherever he could get silver-plate to melt down for the purpose, and he coined in at least sixteen places (p. 321), in addition to London; besides others which cannot be deciphered on the coins.

\* Query, from “*fra wisan*,” Gothic—to spend.

THE DIFFERENT VALUE AND CHARACTER OF THE PENNY  
IN SAXON AND ENGLISH COINAGE.

From the time of William I, the "penny" has been the standard to which the other coins of the realm have been referred, but it has been designated under various names, and its weight and consequent value have varied materially. It has received its symbol, "D." or "d.," from the Roman *Denarius*, the silver coin which was apparently its original; and, in official documents, Acts of Parliament, etc., it has passed through the various names of *Denarius*, *Denier*, *Nummus*, *Esterling*, *Sterling*, and *Penny*.

The Saxon Pound and the Roman *Libra*, L. or £, had the same weight, which corresponded with the "Troy" pound of the present time. By the most ancient Saxon laws, the pound *weight* of silver was reckoned to contain forty-eight shillings (or *solidi*), each shilling to contain five pence. This made two hundred and forty silver pennies in a pound *weight* of silver. But the shilling was merely a name, for there was no piece of money of that value ever actually coined until the reign of Henry VII. The weight of the penny was, therefore, in the Saxon period, the 240th part of a pound *weight* of silver.

The first time that "grains" are mentioned in connection with money in any Act of Parliament, is in the reign of Henry III, by whom it was enacted that "every sterling (esterling, or penny of silver) shall weigh thirty-two graines of wheat that grew in the midst of the ear of wheat; and that a brass standard shall be made for the king's treasury, according to this assize." It appears, however, that the actual weight of grains of wheat varying, the brass weight was made a little heavier, so that twenty-four of these brass grains were made the legal weight for the silver penny in the reign of Edward I. From this time, the

weight of the penny was gradually reduced by successive kings ; to eighteen grains, by Edward III ; twelve grains, by Edward IV ; ten grains, by Edward VI ; and, at last, to  $7\frac{1}{4}$  grains, by Elizabeth, which continued to be its weight until George III reduced it a little lower still, to  $7\frac{1}{8}$  grains, the weight of the present Maunday silver penny, which is the last relic of the only silver coin that existed in William the Conqueror's reign.

When, therefore, in the table of Troy weights, we learn that twenty-four grains make one penny's weight, dwt., (D—wt. "D," *Denarius*, a penny ; and, "wt.," weight) we are carried back to the reign of Edward I, if not further still, and to what has been merely a nominal "penny-weight" for nearly six hundred years.

The penny being thus the standard from which everything started, when Henry VII made an actual coin, for the first time in English history, that was named a shilling, his Act of Parliament declared that "twelve pence should make a shilling." The coin was to be of the weight of twelve silver pennies of his reign ; and, as the penny at that time weighed twelve grains, the shilling was 144 grains in weight, which is largely in excess of the present shilling, which, since the time of George III (1816) has only weighed 87·3 grains. The "sovereign" of Henry VII, which was also a new gold coin not previously in existence, was, by the same Act of Parliament, ordered to be worth twenty shillings, and its weight was to be 240 grains. It was, therefore, worth nearly twice as much as the present sovereign, which only weighs  $122\frac{1}{2}$  grains. The £ s. d. of the present day have, therefore, departed very widely from their original sources, when "£" meant a pound *weight* of silver ; "S.," a shilling, or *Solidus*, a mere name at first, and, eventually, a coin half as heavy again as the present one ; and "D.," the *Denarius*, or silver penny, about three times the weight of the present

tiny, non-current representative of that once universal and only coin of the realm.

#### THE STANDARD OF PURITY OF THE ENGLISH SILVER COINAGE.

It is not without interest to observe the remarkable care with which a uniform standard of purity in the silver coinage of this country \* has been preserved from times anterior to historic record down to the present day. The standard of the silver coinage in the Saxon times is referred to as "the old standard," which remained unchanged by William the Conqueror, whose standard was 11 oz. and 2 dwts. of silver, and 18 dwts. of alloy. This continued without change for about five hundred years, until the reign of Henry VIII, who first debased the currency to 10 oz. of silver and 2 oz. of alloy, then to equal parts of silver and alloy, and, later still, to one part of silver and two of alloy. Edward VI, the year before his death, reduced it lower still, to one of silver and three of alloy, but, in the last year of his reign, he brought it back to 11 oz. and 1 dwt. of silver and 19 dwts. of alloy. Lastly, Elizabeth, in spite of the overwhelming difficulties she had to contend with in the beginning of her reign, brought it back to its "old standard" of 11 oz. 2 dwts. of silver and 18 dwts. of alloy, at which it has remained ever since. Thus, with the exception of thirty-four years, the standard of purity has remained absolutely unchanged throughout the whole English coinage, and in only one quarter of even that short period could it be said that the standard was seriously lowered. A consistent maintenance of monetary purity for at least fourteen hundred years, of which a nation may not unjustly be proud.

\* In France and Germany the silver coinage was debased at a very early period, centuries before Henry VIII's reign.

### THE MORE FLUCTUATING STANDARD OF PURITY OF THE GOLD COINAGE.

The first gold coinage since the time of the Britons was issued by Henry III, and the gold had no alloy, but this issue was called in almost immediately, and there was no gold coinage for nearly a hundred years afterwards. Edward III then issued his first gold money of the high standard of 28 car.  $8\frac{1}{2}$  grs. of gold to  $\frac{1}{2}$  gr. of alloy, *i.e.*, 191 grs. of gold and 1 gr. of alloy. This standard continued unaltered for about two hundred and fifty years, when Henry VIII reduced it to 22 car. gold and 2 car. of alloy, or 11 grs. of gold and 1 gr. of alloy, and before the end of his reign he reduced it still lower to 20 car. of gold and 4 car. of alloy, or 5 grs. of gold and 1 gr. of alloy. It was restored, however, to its full standard in part of Edward VI's reign, and that of Mary; but during Elizabeth's reign it fluctuated between its highest standard and 22 car. gold and 2 car. alloy, which also occurred in James I's and again in Charles I's reigns. In the reign of Charles II the standard was permanently reduced to 22 car. gold and 2 car. alloy, which has been its standard ever since.

It appears, therefore, that for about two hundred and fifty years the English coinage was almost pure gold, the alloy amounting to little more than a penny in a sovereign, a standard of purity somewhat above the European average. That after a period of fluctuations, extending over about one hundred years, between the high standard of purity and an amount of alloy equalling at one time four shillings in a sovereign, the standard settled down in Charles II's reign to about one shilling and tenpence of alloy in a sovereign, and it has remained at this standard for above two hundred years.

## PURCHASING POWER OF A PENNY.

At first sight it appears strange that in a country like England, and, indeed, like France and Europe generally, the small silver "penny" should have been the largest and most valuable coin for a period not much short of a thousand years, viz., from the date of the Roman evacuation, A.D. 450, to the issue of the fourpenny piece—the "groat,"—by Edward III, in 1351; and it becomes a matter of interest to inquire what was its real value, that is, its purchasing power, as distinguished from its nominal insignificance according to the penny of the present time. In King Ina's laws (Saxon) made between 712 and 727 A.D., the price of a sheep with her lambs, for a fortnight after Easter, was one shilling, that is five Saxon pennies, or twelve Roman pence. In the time of Henry I, the king accepted 1s. as a substitute for the bread for 100 of his followers for one night on a royal progress, and 4d. as a substitute for oats for twenty horses on the same occasion (Bp. Fleetwood's *Chron. Precios.*, pp. 56 to 71). A hundred years after that, in 1299, the Common Council of London settled the market price of a fat lamb from Christmas to Shrovetide (the beginning of Lent) at 1s. 4d., but for all the year afterwards at 4d. Three years afterwards the price of a fat sheep was 1s., and that of a ewe was 8d., while a cock or hen was 1½d. In 1309, Ralf de Born, Prior of St. Augustine's, Canterbury, gave a great installation feast, and the wax candles were 6½d. per pound; the geese 3½d. each; eggs, nine for 1d.; and fowls 3d. each. In 1407 (Henry IV's reign) the Prior and Canons of Bewcester, Oxford, paid a man for threshing five days, 10d., and "J. B.," for working one day, 3d. A stonecutter, two sawyers, and three tylers (all skilled workmen), 4d. each per day; but the baker's servant only 1s. for ten days' work. The ordinary wages throughout this period was 1d. or 1½d.



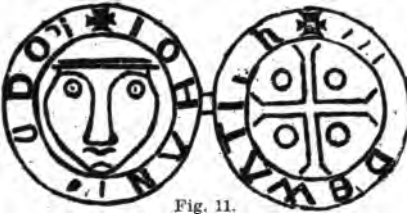


Fig. 11.  
John, "Lord" of Ireland. Page 301.



Fig. 16.  
Black Prince. Crowned  
Leopard on Helmet,  
Page 311.



Fig. 17.  
George IV. Lion Shil-  
ling. Page 331.



Fig. 12. Henry III. Crescent and  
Star exaggerated.  
Page 303.



Fig. 18.  
Henry V. Salute "Heir" of France. Page 312.



Fig. 13.  
Gold Florin. Page 304.



Fig. 19.  
Edward IV. Rose Noble. Page 318.



Fig. 14.  
Edward III. Gold Noble. Page 305.



Fig. 15.  
Black Prince. Gold Coin. Page 311.



Fig. 20.  
Edward IV. Gold Angel.  
Page 318.



Fig. 21.  
George Noble. Henry VIII.  
Page 313.



Fig. 23.  
Edward V. Boar's Head  
exaggerated. Page 314.

per day for unskilled labour, and 4d. per day for a skilled artizan. Ale was 1d. per gallon, and a pair of shoes cost 4d.

To extend this a little beyond the "penny," Edward III's new coin, the groat—or groot—great silver coin of 4d.—was a day's wages for a skilled artizan; and his new gold coin, the noble, worth eighty silver pennies, or nominally six shillings and eight pence, was really three weeks' wages for the highest class of workmen.

#### WILLIAM II, HENRY I, AND STEPHEN (1087 to 1154).

The principal features of these reigns are the undistinguishable similarity between the coins of the two Williams, the rarity of the coins of Henry I and Stephen, and the number of different designs which occur among the few that are known.

There are not less than seventeen different kinds of coinage of Henry I, and eleven of Stephen, figured in Hawkins' *Silver Coinage of England*, but none of them exhibits any features of special interest except one, in which Stephen and another figure, supposed to be Matilda, are represented as jointly holding a standard between them.

#### HENRY II, RICHARD I, AND JOHN (1154 to 1216).

There is nothing of interest in connection with the coinage of Henry II, and although Richard I has been such a hero of romance and idol of the English nation, he passed but a very short portion of his reign in England, and never coined any money here. At least none has been discovered with his name upon it. But Richard coined money in France, of which a penny, coined in Poitiers, PICTA-VIENSIS, is an example.

John also coined money, but in Ireland, not in England, and one of his coins is shown in Fig. 11, Pl. II. The one feature of interest in his coins is the title that he assigns to

himself. Henry II was the first English king who had assumed authority, as a right, over Ireland; but he never put Ireland upon his coins, nor did Richard his son. But John, who was Lieutenant in Ireland for his father and for Richard, did coin money during their lifetime, and styled himself "Dominus" ("Lord") of Ireland, abbreviated into DO. I. When he became King of England he altered his title into REX IBER, a title which, however, was never assumed by any subsequent king for nearly three hundred and fifty years, until 1544, near the end of Henry VIII's reign, who is himself styled DNS. HIBERNIÆ in his coins until that date. Edward I was DNS. HIB., and all his successors were DOMINUS, in some more or less abbreviated form D., DS., DNS., until the English Parliament, in 1544, styled Henry VIII "King of Ireland." After which the title of Rex Hiberniæ appears in every reign.

#### HENRY III (1216 to 1272).

Henry III's coinage (1216 to 1272) has several features of interest, for he was the first king who indicated upon his money the number of the sovereigns of the same name who had reigned in England. Upon his coinage of 1248 he placed the inscription HENRICVS REX III, an example which was not followed by any succeeding king until Henry VII, about two hundred and fifty years afterwards. Doubt has sometimes been cast upon Henry VII having placed numerals on his coins, but there can be no doubt about his having done so on reference to Hawkins' *Silver Coins* :

Fig. 383, 385, HENRIC V.I.I. DI GRA.

Fig. 384, HENRIC SEPTIM DI GRA.

Henry III is also interesting as having issued the first English gold coin since the Norman Conquest, if not indeed

since the Roman occupation.\* He issued a gold penny, to be worth twenty silver pennies, and it was coined of pure gold without any alloy; but the country was not rich enough at that time to bear such a costly coin, and the London bankers and merchants petitioned him to withdraw it, which he did at the price of nineteen pence each, and the experiment of a gold coinage was not repeated until the time of Edward III, eighty years afterwards. Only three of these gold pennies are known to numismatists. One was sold for £41, another for £140.

But as a curiosity of Henry's coinage, the one engraved in Fig. 12, Pl. II, must bear the palm. Henry was in want of cash, a condition of impecuniosity which was rather habitual with him. So he summoned the barons and told them he wished to go on a crusade to the Holy Land, and he issued the coin represented in this figure, bearing a crescent surmounted by a star, which was accepted at that period as a crusading badge. It was the Saracenic badge in the time of Richard I, and is still present on the medals of honour granted by the Sultan of Turkey. Richard, after his crusading, adopted it upon his Great Seal, and John continued it upon his Irish coins. But its appearance for the first time upon the coinage of England was surely a guarantee that Henry was really going upon a crusade, and the barons granted the subsidy—but he never went.

#### EDWARD I, II, III (1272 to 1377).

The coinage of Edward I is interesting, not because of new designs or new legends, but because of the new coins which he issued—the round halfpennies and the round farthings already mentioned (p. 294), and because the excellence of his pennies, and their high standard of purity, much above the average on the Continent, gave them great cele-

\* See *Trientes*, p. 291.

brity in Europe, and they were imitated in the Low Countries by the Emperor of Germany and the King of Aragon (*Coins and Medals*, Stanley Lane-Poole, p. 109).

Passing over the coinage of Edward II, which has little of interest in any respect, we come to that of Edward III, 1327 to 1377, which opens a new era in coinage, and is in many respects the fullest in coinage interest of any English period. Eighty years had elapsed since any gold coinage had been attempted in this country; but about the time when Edward III came to the throne a strong desire for a gold coinage had sprung up in North Italy, France, and Flanders, and Edward wished England also to participate in its benefits. He therefore made an agreement with Flanders, with which country most of our trade in wool, etc., was carried on, that a gold coin should be issued, of a specified weight and standard, resembling the "florin" which had been recently issued through Europe from Florence. It was to be worth seventy-two silver pennies, or six shillings nominally, for at that time there was still no such *coin* as a shilling, and it was to be current in both countries alike. But the coins were not really worth the nominal amount fixed for them. The merchants would not take them, and so they were speedily recalled, and only two are known to be in existence (Kenyon, *Gold Coinage*, p. 17).

The interest of this gold florin (Fig. 13, Pl. II) is, however, so great as to deserve more than a passing notice here, although it was not originally an English coin. After the times of the Romans, and the lawlessness and barbarism which overran Europe for so many centuries, there was scarcely any gold coinage (see p. 286), until, in 1252 the Florentines issued the novelty of a small gold coin, representing a rude figure of St. John the Baptist on one side, and a beautiful design of the Lily of Florence on the other, with the inscriptions, "S. Johannes B." and "Florentia." The

name of "florin" commemorates Florence, the city of its issue, and the "*Fiorino d'oro*," or "flower of gold," the Lily badge of the city. Edward III, when commencing a gold currency for England, adopted the name and value of the coin, but had a totally different design engraved. But when the coin was withdrawn, as above described, the name was not revived until it reappeared as a silver coin in the reign of Queen Victoria.

The same year, however, in which the florin was called in, Edward issued a larger and more valuable coin, to be worth really eighty silver pennies, or six shillings and eightpence nominally, which was to be called "the noble," from the noble metal, gold, of which it was made—the half-nobles were called "maille nobles," and the quarter-nobles, "fourth-thing," "farthing," or "ferling nobles." To this coin special interest attaches, for it is a beautiful one (Plate II, Fig. 14), and can still be obtained in great perfection. Its design and ornament continued, more or less completely, upon the gold coinage of England until the time of Charles I, a period of nearly three hundred years. Its motto was constantly repeated, until the end of Elizabeth's reign, and it set a standard for excellence of workmanship, which, even now, cannot fail to excite admiration.

Edward III was also the first king who introduced mottoes, or, as they are called in coinage, "legends," upon his money; and many of these legends are of great interest and curiosity as we trace them from one reign to another, and observe how they illustrate the sentiments and beliefs of the various sovereigns, and of the nation, at different times.

The noble referred to is larger than a half-crown, but in thickness it resembles a worn sixpence. The king is represented standing, with his sword drawn, in the middle of a one-masted ship with its rigging, floating upon somewhat

rough waves, and the whole is surrounded by his name: Edward, King of England and France, and Lord of Ireland—Edward Dei Gra.\* Rex Angl. (et) Franc Dn Yb (Hyb). The other side is richly ornamented with a central cross, crowns, fleurs-de-lis, and lions, enclosed in a circle consisting of eight smaller portions.

The ship and the armed Sovereign were intended to commemorate a victory gained over the French fleet at Sluys, on Midsummer day, 1340, after a fight in which Edward had acted as admiral of the English fleet; a victory which was also celebrated in the following rhyme (Selden, in the reign of Henry IV):—

But King Edward made a siege royall  
And wonne the town and in speciall;  
The sea was kept, and thereof he was lord,  
Thus made he nobles coins of record.

The inscriptions on the reverse of the noble, and on the half and quarter noble, are all three different, and are so remarkable as to deserve detailed consideration.

The motto or "legend" upon the noble is "IHC AVTEM TRACIENS PER MEDIUM ILLORVM IBAT." *But Jesus, passing through the midst of them, went his way.* What possible connection, it may well be asked, could there be between this quotation from the fourth chapter of St. Luke's Gospel and the issue of the first permanent gold coin of an English monarch? The narrative in the Gospel from which it is taken relates the preservation of Jesus from the danger to which he was exposed from the anger of the people of Nazareth, who had just drawn him from the synagogue to the brow of the hill on which the city stood, for the purpose of casting him down. And this verse

\* D.G. or Dei Gra. were placed upon the coins for the first time, in English coinage, by Edward III. They had been upon the French money above five hundred years previously.

was looked upon as a charm, and it was hoped that by placing it upon this new and costly gold coin, it might preserve the coin itself, and also the bearer, from perils by land or sea, from robbers or from shipwreck. And smile, as we may, at such a notion, the motto was retained upon the English gold coinage for nearly three hundred years, and only disappeared finally in the reign of James I. The ship also retained its place upon the English gold coins until the time of Charles I (Fig. 26, Pl. III)—above three hundred years. It is strange that such an emblem, after remaining so long on the coinage, should have been removed, and never restored by the nation which boasts of possessing the supremacy of the seas.

The motto or "legend" is not only curious from its application as a charm, but from its language also, for it is essentially a Latin quotation, while the principal word in it—IHC—is Greek, which would appear to have been a source of continual perplexity to the medallists who successively coined it. The three letters—I, H, C—are really an abbreviation of the capital Greek letters for Jesus; for the H is really the Greek capital E, and the C is merely an alternative form of the Greek S. The letters have been used as a Christian symbol from times of unknown Christian antiquity, and, in the form of IHS, are still in universal employment on altar cloths and elsewhere in Christian worship. The letters, however, being apparently Roman, not Greek, and occurring in the midst of a Latin quotation, appear to have been read as being Latin when first introduced upon the coinage, Greek being, at that time, an almost unknown language in Western Europe. The medal-list, therefore, in a subsequent coinage, seems to have thought that IHC could never spell "Jesus," but that, if the C had been a mistake for an E, it would be a little more intelligible, and the H, being merely an aspirate, might be

disregarded; an "H" more or less being of little consequence. In a subsequent coinage the name is therefore spelt IHE. Another, and later medallist, has improved still further upon this, and the word appears as IHES. But sometime after this the spelling reverted to the old IHC, while the C was afterwards changed by some other medallist into the modern S—IHS. Still, however, the letters appear to have remained a puzzle, for we find the engravers again returning to IHE, and, later still, on the new sovereign of Henry VII, we meet with IHESVS, the medallist being determined that this time, at any rate, there should be no mistake.

At length, however, towards the end of Henry VIII's reign, Greek was so widely studied that the correct spelling, IHS, was finally restored, and was retained to the end of Elizabeth's reign, James I dispensing with the legend altogether—which thus disappeared from the English coinage, after having been in continual use for a period of nearly three hundred years. There is no legend to be compared with this in popularity or duration, or in the changes its principal word has undergone during its long period of life.

The occasion and the meaning of the legends adopted by our Sovereigns are frequently evident at a glance, but some of them require investigation to account for their presence. Thus, the mottoes adopted by James I, for the first and only time on English coins, relate so clearly to the recent union of England and Scotland under his reign as to require no consideration; and the motto, "*Timor Domini Fons Vitæ*" (*The fear of the Lord is a fountain of life*), of Edward VI, was manifestly in harmony with his position as a mere boy, needing help indeed when he came to the throne, and with his character as a sensitive, religious youth. So also was Cromwell's legend, "*Pax quæritur bello*" (*Peace is*

*sought in war*"), a natural expression of his feelings after his stormy antecedents. But when we find Edward III adopting in his earliest gold coinage, in addition to the curious motto on the noble we have already considered, the legend on his half noble, "*Domine ne in furore tuó arguas me*" (*Put me not to rebuke O Lord in thine anger*), and, at the same time, on the quarter noble, "*Exaltabitur in gloria*" (*He shall be exalted in honour*), we feel that they are expressions of sentiment that deserve and call for explanation.

In seeking an explanation of the second and third of Edward's mottoes, I think we find them in his early history. His father had been cruelly murdered by his mother and her paramour, Mortimer, and he himself was but a boy, fifteen years old, when he came to the throne, though only nominally even then, for he was still for three years under the control of these criminal Regents. How deeply the past must have sunk into his heart would appear from his course after he had gained strength enough actually to grasp the reins of power at eighteen years of age, for his first action was to put his mother into prison, and to bring Mortimer to trial and execution for his crimes. In his first coinage, then, Edward seems to give utterance to his inmost thoughts, and placed upon his coin the prayer of David, who had also passed through the waters of affliction in his youth—"Oh Lord, rebuke me not in thine anger, neither chasten me in thy displeasure." And, having thus given expression to his heart's complaint, he seems, by one of those revulsions of feeling that we so often meet with in men of reflective and self-contained character, to have thought upon the successes he had already obtained in Scotland and in France while still a young man, and he records upon his coins the change in his condition by again adopting the words of David, who also came eventually to great honour. David had concluded

the Psalm already quoted with the words, "The Lord hath heard my petition; the Lord will receive my prayer; all mine enemies shall be turned back and put to shame suddenly"—a record which corresponds closely with another of Edward's mottoes, upon the new silver piece—the groat: "Posui Deum Adjutorem Meum" (*I have set God as my helper; He shall be exalted in glory*). We seem, in these legends upon his first coinage, to get a glimpse of Edward's real character that is not always prominently before our eyes in his warlike and apparently ambitious career through life.

The principal interest in Edward's silver coinage was the advance upon the silver penny of so many hundred years standing made by the introduction of the new "groot" (Dutch) "great" coin—the "groat," which was of the value of four silver pennies, and originally weighed 89 grains. The coin continued to be issued by succeeding monarchs until the reign of Charles II, but its weight was gradually reduced from 89 grains to  $29\frac{1}{4}$  grains in Queen Victoria's reign. No groats were in circulation as currency from the commencement of Charles II's reign until the last year but one of William IV, though they were coined every year under the title of Maundy Money. And having been originally introduced by Edward III as the "great" coin *par excellence*, they sank at last, being the smallest silver coin, into such contempt, that the phrase "I would not give a groat for it" was employed in the reign of George III to indicate the worthlessness of an object under consideration. A curious circumstance revived the active circulation of a fourpenny silver piece under the name of a "Joey," in 1836, the year before the death of William IV. The London cab fares had just been reduced from 1s. and 6d. to 8d. and 4d., and Mr. Joseph Hume, M.P., who had great influence at the time, induced the government to issue a new fourpenny coin

to save the sixpence, for which, of course, the cabmen never had change. In revenge for this, the cabbies nicknamed the piece a "Joey,"\* by which name it was popularly known in London, and also, but less generally, in the provinces. Its employment for this special purpose having come to an end by another change in the cab fares, its utility ceased, and it has been called in from circulation.

#### BLACK PRINCE (1330 TO 1376).

Although the Black Prince never reigned in England, he occupies so prominent a place as a national hero and a type of what was brave and noble, that his coinage in France must not be passed by unnoticed. Edward III gave him the sovereignty of Aquitaine so fully, that he coined both gold and silver money there, of which two illustrations are given in Figs. 15, 16, Pl. II. General Ainslie succeeded in obtaining many of the Black Prince's coins from the peasantry and other sources in that part of France, and has engraved them in his interesting work on *Anglo-Norman Coinage*. The large coin, Fig. 15, Pl. II, is beautiful in its design and ornamentation; and the smaller coin—the crowned leopard—Fig. 16, Pl. II, is clearly the original of the crowned lion of George IV, which was put upon the "lion shilling" as an original design some four hundred and fifty years afterwards. There is a curious tradition about the "Black" Prince which General Ainslie found to be still current among the Aquitaine peasantry, so late as George IV's reign—that the Prince was a sorcerer, a black man—a Moor—from which circumstance he received his designation of "Black" Prince. And it was his compact with the devil, and the aid supplied by infernal powers, which enabled him to gain his victories and succeed in all his warlike undertakings. The legends on his coins are curiously illustrative

\* See *Proceedings of the Literary and Philosophical Society of Liverpool*, Vol. xxxix, p. 227.

of his own character, and of the sentiments of the times. "Christ rules, Christ reigns, Christ conquers," is a favourite legend; while "Glory to God in the highest, and on earth peace to men" is a singular legend to have been adopted, evidently without any sense of incongruity, by a Prince whose name from first to last is associated with fighting and slaughter. "God is a faithful judge, strong and patient," and "God is my refuge and strength—my heart has trusted in him," may complete our notice of one of the most noble and evidently conscientious Princes to whom England has given birth.

RICHARD II AND HENRY IV, V, VI (1377 to 1461),  
 Adopted no new special designs or mottoes, until Henry VI, during his temporary restoration to the throne, after his first imprisonment. Then he issued a new coinage, and expressed the simple religious character of the man by the two new mottoes: "O Crux ave spes unica" (*All hail, O Cross, our only hope*), and "Per Crucem tuam salva me XPE Redemptor" (*Save me by thy Cross, Oh Christ, my Redeemer*).

But the coin issued by Henry V, in France—the Salute—Fig. 18, Pl. II, is deserving of a passing notice. Where the artist obtained his original for the archangel must be left to conjecture, but the coin commemorates Henry's engagement to Katherine, daughter of the conquered King of France, at which time Henry made an undertaking that he would not assume the title of King of France during the king's lifetime. Accordingly the inscription "Hæres Franciæ" (Heir of France) is found upon an extremely rare coin which was in the cabinet of Louis XVIII of France. Henry always styled himself King of France in his English coins, but kept his promise as regarded those issued in France itself.

EDWARD IV (1461 to 1483).

The coinage of this reign is interesting, not because of

any new legends inscribed upon the money, but because of the change in the character of the noble (Pl. II, Fig. 19), or, as it was now called, "the royal," by the introduction of the white rose of York below the figure of the king upon the obverse of the coin. From this it has received the name of the "rose noble," or "ryal," and its further name of "spur noble," from the sun with its spreading rays (somewhat resembling a spur), the badge of Edward IV, which is in the centre of the reverse of the coin. The sun was adopted by Edward on his badge because, on the morning of one of his successful battles (the battle of Mortimer's Cross), he saw three suns, which he accepted as an omen of victory.

This single rose of the York Edward became a double rose in the coinage of Lancastrian Henry VII, after his marriage with Elizabeth of York, and so it remained as a principal feature in the gold coinage until early in the time of James I.

Edward IV introduced a totally new design for a gold coin—the Archangel Michael fighting with the Dragon (Pl. II, Fig. 20), which gave its name of "angel" to the coin. This continued to be a favourite with our monarchs until the period of the Commonwealth, which dismissed all such emblems from its money. In Edward's coins, and those of his successors, the angel is represented with wings, and is trampling upon the dragon; except in that of Henry VIII, who introduced the innovation of converting the winged archangel into St. George in full armour, mounted on horseback (Pl. II, Fig. 21), but still armed with a long spear. This change, however, does not seem to have been popular, for it never appears again, and with the Commonwealth both St. Michael and St. George disappear until the time of George III. In his coinage, St. George again appears, on horseback, but this time without defensive armour, and apparently having only a short Greek

sword. Careful examination, however, shews a portion of a broken spear sticking in the body of the dragon, and the broken shaft lying upon the ground, but only to be found by careful search. The Elgin marbles and the Greek sculptures were becoming the fashion about the time when the present St. George and the Dragon were placed upon the coinage, and the Greek absence of clothing and armour is not to the apparent advantage of St. George in the conflict.

#### EDWARD V (1485),

The young murdered prince, is sometimes said not to have coined any money, but the angel (Pl. II, Fig. 22), copied from Kenyon's *Gold Coinage of England*, has Edward's name upon it, and exhibits the boar's head (purposely exaggerated in the drawing), which was the badge of the Duke of Gloucester, afterwards Richard III, who had charge of the young king, and appears to have issued money in Edward's name, whatever might have been his object in doing so. Ross of Warwick, says, in his *Hist. Regni. Angl.* (q. by Ruding), "Money was thus coined and issued in his (Edward's) name."

#### RICHARD III AND HENRY VII (1485 to 1509),

Introduced no new legends, but an old one which Henry VII retained and placed upon nearly all his coins, "*Posui Deum adiutorem meum*" (*I have set God as my helper*), seems, like Edward's mottoes, to throw light upon his character, from the frequency of its occurrence, and from the addition made in it, for the first time, of what experts in coins call "the eye of Providence," set in the middle of the motto. As if he desired to emphasise his adoption of the sentiment of the legend by appealing, as it were, to a visible eye set in the midst of the text, as if, indeed, to say, "Thou God seest whether I am true or not." The "eye of Providence" in





Henry VII. New Coin;  
"Sovereign." Page 815.



"United Roses."  
Page 815.



Fig. 29.

Charles II. Originals of present Florin and  
Double Florin. Page 825.  
(Charles's Titles omitted in these Drawings.)



Fig. 24.

Henry VII. "Eye of Providence," after "Posui,"  
exaggerated. Page 815.



Fig. 30.

James III. "Pretender." Page 327.



Fig. 25.

Charles I. "Declaration" Coin.  
Plume of Feathers. Page 820.



Fig. 31.

Silver Medal. End of Rebellion of 1745. Page 338.



Fig. 26.

Charles I. Last Ship. Page 807.  
See Motto. Page 820.



Fig. 32.

Henry IX. Last descendant of James II. Page 828.



Fig. 27.

Commonwealth.  
"Mottoes Money."  
Page 823.



Fig. 28.

Cromwell. Page 822.



Fig. 33.

The Queen's Accession \$5 Gold Coin. Page 822.



Fig. 24, Pl. III, is enlarged from Figs. 363 and 382 in Hawkins's *Silver Coinage of England*, and is exaggerated for the purpose of distinctness. In giving the description of the characters by which Henry VII's Canterbury half-groat may be distinguished from others, Hawkins simply says, among other things, "after Posui, the eye of Providence," and he gives the engraving of the coin itself (Fig. 363), but attaches no theory to it, and is not responsible for the interpretation now offered of Henry's meaning in placing it there.

Henry's character, as we have been accustomed to think of it, is not attractive. According to the general impression he was mean and penurious, and always trying to take advantage of the nobles and ruin what were left of the great ones, for whom our sympathies thus become enlisted. But if he really believed that the permanent reduction of their great and almost independent power within still straiter bounds was essential to prevent a recurrence of such civil wars as had devastated England for so many years, and if he honestly desired to save the impoverished people from oppressive taxation, by limiting his own expenses, and husbanding, instead of spending his revenue,—if he did truly "place God always before him," striving to live continually as under His eye, then we may accept his beautiful chapel in Westminster Abbey as a genuine religious expression of his character, and think somewhat less hardly of him than has been our wont in times past.

Henry VII's coinage has a much more than average interest, as he was the first king who placed his actual portrait as a profile on his money, and who coined an actual shilling and an actual sovereign (Pl. III, Fig. 23). He also was the first king, after Henry III, who placed the numeral of his reign, "Henry VII," or "Henricus Septem," upon his money, and he also made the double rose of York and

Lancaster a prominent feature in the design, which continued prominent in the early rose royals of James I, but then disappeared from the coinage—the United *Kingdoms* after that being of more interest to James and the nation than the united *Roses*.

#### HENRY VIII (1509 to 1547).

The only original design on Henry's coinage is the St. George and the Dragon, p. 313, and his legends are simply repetitions of previous ones, except two, which are the last that we should look for from a monarch of his character and antecedents. The legend on the reverse of his George noble, issued four years before his death, is "*Tali dicata signo me(n)s fluctuari nequit*" (*Dedicated—or consecrated—by this sign, my mind can know no fear*). This motto is taken from a Latin hymn by Prudentius, in the fourth century, entitled "*Hymn before Sleep*," which is still, in MS., in the Monastery of St. Gall. In it we are recommended to make the sign of the cross on our forehead and our heart when we go to bed, because "*tali dicata signo mens fluctuari nequit*."

The hymn may be rendered in English—

My heart and brow by Cross impressed,  
My soul can know no fear;  
For Christ himself shall give me rest,  
His presence ever near.

We certainly should not have expected such a hymn to be in Henry's mind and on his coins in his old age.

This legend, in Henry's failing age, connects the past with the present in a manner little to be looked for from such a source; for the hymn had doubtless been taught to children, and, it would seem, to Henry himself in his childhood, from the earliest Christian times to the Reformation

period, and since that date it has been taught to succeeding generations of children in the modified form of—

Matthew, Mark, Luke, and John,  
Bless the bed that I lie on;  
One to watch, and one to pray,  
And two to carry my soul away.

And we may not doubt that many a little one has slept with fearless mind, fortified by this ancient hymn.

The other legend really appears inexplicable, coming from a monarch who had, throughout his reign, been suppressing monasteries and bestowing the spoils on his courtiers, "*Redde cuique quod suum est*" (*Restore to every man what is his own*). The interpretation must be left to another than the present author.

Henry VIII's nickname of "Old Copper Nose," is much less generally known than "Red Haired William," "Edward Longshanks," and "Crookbacked Richard." It derived its origin from his debased silver coinage, which by wear soon exposed the coppery colour of the base metal on the elevated portions of the coins, chiefly the tip of the nose, which shewed its coppery tint, and gave rise to the nickname.

#### EDWARD VI AND MARY (1547 TO 1558).

The mottoes taken by Edward VI (1547 to 1558), are strongly indicative of his consciousness of the necessity for help, arising from his youthful age, and of the religious principle which directed him. His mottoes, "the shield of faith protects him," and, "the fear of the Lord is a fountain of life," clearly illustrate the feelings under which he chose them; and the motto, employed for the first time in English coinage by Mary, in 1558, "this is the Lord's doing, and it is marvellous in our eyes," is equally natural and expressive, when we remember how her mother had been degraded from

her high station ; how she herself had been declared illegitimate by her own father and by the parliament ; how she had been excluded, to all appearances, from all prospect of the throne ; and how, even after she had been proclaimed in London, she had to fight serious battles before her crown was safe. Well might she, when able at length to issue coins as Queen, record her feelings at the time by "*A Domino factum est istud, et mirabile est in oculis nostris*" (*This is the Lord's doing, and it is marvellous in our eyes*).

#### ELIZABETH (1558 TO 1603)

Took no new motto, but her coinage is interesting, as having permanently restored the purity of the silver coinage, and having been the commencement of the "Colonial Coinage" of British sovereigns. She authorized a coinage for the East India Company, resembling in value the Spanish coins of eight, four, and two royals, which were in use in the East. She determined to issue a genuinely English coinage as a substitute for the Spanish money, in order "that her name and effigies might be hereafter reputed by the Asiatics, and she be known as great a Prince as the King of Spain."\*

#### JAMES I (1603 TO 1625).

Nearly all his mottoes are limited to his own reign, and were naturally called forth by its special circumstances. The union of England and Scotland under him, could not fail to be commemorated on his coinage ; and, "what God has joined together, let no man put asunder ;" "I will make of them one people ;" "Henry united the Roses, but James the Kingdoms ;" "God preserve the united kingdoms ;" and, "Let God arise and let His enemies be scattered," are all legends that require no further comment.

A new design upon part of his gold coinage, was the

\* "*Coins and Medals*," p. 125, Stanley Lane-Poole.

king's head crowned with a wreath of laurels, from which the coins took the name of "laurel." It was indicative of his character, for it was the old Imperial symbol on the Roman coinage but it was new to English coinage, and seemed to claim a higher position for himself than simply that of king. He did not put the title *Imperator* upon any of his *coins*, but he did upon his accession *medal*, in 1603, in which he has inscribed himself as "*Jacobus Totius Ins. Bryt. Imp., et Franciæ et Hib. Rex*" (*James, Emperor of the whole Island of Brytain, and King of France and Ireland*).

#### CHARLES I (1625 TO 1649).

The mottoes adopted by Charles I, at various successive periods of his reign, are to my mind peculiarly sad, for they seem to disclose the inmost heart of the king and his desire to act aright, while they are in melancholy contrast with his actual relations with the people and with the nation before the close of his reign. In order to appreciate their significance it is necessary to bear in mind the influences under which Charles was brought up, and the ineradicable impression they seem to have produced upon his mind and character.

James, his father, was evidently heart and soul imbued with the belief in the majesty and the divine right of the king, and with the conviction that the formula "the king can do no wrong" was not simply a legal fiction, implying that it was his ministers and not himself who might have committed a wrong. He evidently thought that it expressed, as a literal fact, that the king *could* do no wrong, and that whatever an action might be if committed by a private person, it ceased to be wrong if committed by a king. The most deliberate and unblushing breaches of faith or violations of the law therefore ceased to be wrong when the king was

their doer, and upon this belief, imbibed from his earliest years, and honestly entertained we need not doubt, Charles unhappily acted throughout his reign.

With this preliminary warning, we may now examine his mottoes, the first of which he took for his first coinage, "*Christo Auspice Regno*" (*I reign, Christ being my helper and protector*), a sentiment in which both the king and the nation were doubtless agreed. But troubles soon arose between them, dependent upon their respective views of kingly and national rights, and when we take note of his next motto in point of time, "*Florent Concordia Regna*" (*May the kingdoms flourish in harmony*), in 1628, we seem to catch a glimpse of the cloud which had already begun to gather at the commencement of the Long Parliament. After nearly ten years of troubled times, his next motto appears on the coinage in 1637, "*Justitia Firmat Regnum*" (*Justice strengthens the kingdom*); in the interpretation of the important word in which, "*Justitia*," the parliament and nation were beginning to take a fatally different view from Charles himself. But as time progressed troubles increased, and the king's power had so far waned that in 1642 he placed upon all his coinage (Pl. III, Fig. 25) the significant inscription: "*Religio Protestans, Leges Angliæ, Libertas Parliamenti*" (*the Protestant Religion, the laws of England, and the freedom of Parliament*), a declaration made under compulsion, and significantly, but sadly, accompanied on the same coins by the revival for the first time in his reign of his father's motto "*Exurgat Deus et dissipentur inimici*" (*Let God arise and let his enemies be scattered*). In 1643 a new motto appears, and of a very singular character, for the war between Charles and the Parliamentary forces was now in open and active career: "*Amor populi præsidium Regis*" (*the love of the people is the safeguard of the king*) (Pl. III, Fig. 26). Was this an expression of heart-yearning

on the king's part for the love that he saw so fast ebbing away from him, or was it a reproachful address to the nation, warning them of their neglect and its possible consequences? Who can tell? But it was accompanied by another motto, surely indicative of his belief to the last that the king could do no wrong nor suffer practical defeat: "*Cultores sui Deus protegit*" (*God protects his servants*).

But now the close was approaching, and we have no fresh mottoes on the coinage to reveal the thoughts of the king's heart; and we take leave of these with saddened reflections upon his unhappy career, and an involuntary echo of Queen Mary's legend—"A Domino factum est istud, et mirabile est in oculis nostris" (*This is the Lord's doing, and it is marvellous in our eyes*).

The principal features of interest in Charles's coinage, as distinguished from the legends, are the great number of his mints,\* the variety of the designs, and the presence of the Prince of Wales's plume of feathers in several of his coins, both gold and silver (Fig. 25, Pl. III). During his reign, so much gold and silver were discovered in Wales that a special mint was established at Aberystwith for coining the silver, while the gold was sent to the mint at Oxford, and all the money made of Welsh gold or silver is indicated by the presence of the plume of feathers. The king on horseback was by far the most favourite design, and next to that, the king's profile with a numeral, *e.g.*, XX, XII, or VI, to indicate the value of the coin in shillings or in pence. But Pontefract Castle and Newark, each with a simple crown, and the united roses of York and Lancaster, as well as other designs, are upon his coins, many of which are beautifully executed.

\* Aberystwith, Beeston-Castle, Bristol, Carlisle, Chester, Colchester, Exeter, Newark, Oxford, Pontefract Castle, Scarborough, Shrewsbury, Weymouth, Worcester, and York, in addition to London, and some others which cannot be deciphered.

## THE COMMONWEALTH (1649 TO 1658).

The only design adopted by the Commonwealth (Fig. 27, Pl. III) was curiously suggestive of the maxim, that "gratitude is thankfulness for favours to come," for the only design employed was a shield, containing the Cross of St. George for England, and the Harp for Ireland, while Scotland is entirely ignored. The Scots had sold the King into the power of the Commonwealth, and the gratitude shown in return was the omission of that country from the future coinage. The form which the two united shields took upon the coin somewhat resembled the legs of a pair of breeches, and the "Breeches Money" was the nickname bestowed by the Royalists upon the Commonwealth coinage.

The only inscription also became a subject of ridicule; for upon the obverse was inscribed, "The Commonwealth," and upon the reverse of the coin, "God with us," which gave origin to the Cavalier *Jeu de Mot*; "Yes—God and the Commonwealth are always on opposite sides."

## CROMWELL (1653 TO 1658).

Cromwell restored the emblem of Scotland to a place on his coinage (Pl. III, Fig. 28), and he issued both crowns and half-crowns, and smaller pieces; all of which were declared not to be currency when Charles II came to the throne. They had been so short a time in circulation, that they are often in good condition, and they are also so scarce as to be expensive. He also, like the Commonwealth, took but one motto, which seems to reflect his thoughts on consideration of his troublous and stormy life. "*Pax quæritur Bello,*" (*Peace is sought in War*); and whether he found peace, or sought it but in vain, we need not take upon ourselves to decide. The coat of arms adopted by Cromwell (Pl. III, Fig. 28) for his coinage, consists of the St. George's Cross

for England; St. Andrew's Cross and the Lion rampant for Scotland; and the Harp for Ireland; but in the crown, which surmounts this coat, do we not gain a glimpse at his inmost heart and desire, which he had endeavoured to screen from the public knowledge? In 1657, the crown was offered him by the House of Commons, but he ostentatiously declined it on politic considerations, while in his heart of hearts he seems to have longed for it, and "*unostentatiously*" ordered the minters, the following year, to place it upon his coins, so few of which ever found their way into circulation, that it is a difficult matter to obtain one of them for exhibition.

#### CHARLES II (1660 to 1685).

It is almost with a sense of relief that we turn from the grave thoughts inspired by the previous legends, to the only motto that is new in the coinages of Charles II; which was, "*Decus et Tutamen*," on the edge of his crowns and half-crowns (*Beauty and Safety*, or *Glory and Protection*). This legend, stamped round the edges of his large coins, retained its place there in future coinages up to the issue of the last of the crown pieces of our gracious Queen. What was the meaning and the object of this new motto? Looking back upon the legends of the various sovereigns which have passed before us, we shall have noticed how many of them have a distinctly religious aspect, and with this recollection present in our minds, we may naturally think that Charles possibly meant thereby to acknowledge that God was the glory and protection of the realm. Or, remembering the exuberant loyalty that was manifested on his restoration to the throne, and the perhaps exaggerated language in which it was the fashion of the time to express it, we may think that possibly the motto was intended to imply that the King was the glory and the safety of his people, and that it was intended as a

lasting expression of loyalty. But the cold breath of facts dispels both our religious and our loyal interpretations, and reduces the motto to a prosaic expression—that it was put upon the outer edge of the coin, simply to be an “ornament and protection” of the money itself against the evil doers who were in the habit of clipping or filing the edges of money. Evelyn says, that being in company with the master of the mint, he suggested the motto and this method of protecting the coins from injury, and it was at once adopted and acted upon. It has been retained until the date of the late jubilee coinage of the Queen, on the crown piece of which the motto does not appear, as the protection is effected by the milled edge, damage to which would be immediately evident and detected. Oliver Cromwell really anticipated Charles II, and introduced this method of protection four years before Charles, by a legend round the edge of his crown pieces, in 1658; “*Has nisi periturus Mihi adimat nemo*” (*Let no man remove these letters from me, except on pain of death*); for clipping or defacing the coinage had long been a capital offence, and in the reign of Edward I, above two hundred men were hung for clipping. In this country, this severe penalty was limited to injuring the *gold or silver* coinage; but, in the Isle of Man, so lately as the rule of James, the Fifth Earl of Derby and Lord of Man, an act was passed by the House of Keys authorizing the penalty of death for mutilating the *copper* coinage of that island, copper being the only native circulation, and, in a sense, the only legal currency of the Island.

Charles II was the first English monarch who issued a royal copper coinage. Copper and lead tokens were commonly issued, by private authority, previous to the time of James I, who forbade future private issue, and granted the *monopoly* to Lord Harrington—a system of issue which continued until the Commonwealth abolished “monopo-

lies"—after which time anyone again coined copper money at pleasure until 1672, when Charles again abolished the private privilege and coined copper himself, and the *tokens* gradually but slowly disappeared from circulation.

Charles II was the first monarch who coined a five pound and a two pound gold piece, as well as the ordinary smaller ones on his accession, and the custom has been followed to the present time, though the coins have not always been issued for currency. In his reign, gold began to come in large quantities from the Guinea coast, and, the coinage being chiefly made from it, the old sovereign was now termed a guinea, though it was still worth only twenty shillings as currency. The designs of the crown and half-crown (Pl. III, Fig. 29) were new in his reign, but we have now become familiar with one of them in the silver florin, to which we have been so long accustomed; and with the other, in the new double florin, which, though issued as part of the jubilee coinage, has never really been current, and is now only to be seen in the collections of the curious—never passing from hand to hand or through the banks, in the ordinary way of business.

JAMES II, WILLIAM AND MARY, QUEEN ANNE (1688 to 1714), AND GEORGE I (1714 to 1727).

Adopted no mottoes upon their coins beyond their names and titles of sovereignty; but upon the first coinage of George I (1714 to 1727), issued in 1714, we meet for the first time in English coinage with the title *Fid. Def. or F.D.*, which was never placed by Henry VIII or any of his successors upon their money. Why then should George I, of all people, be the first to pose before the English nation as Defender of the Faith—a German who was a total stranger to the nation; who cared nothing for the country except so far as it furnished funds for his Continental wars; and whose creed,

whatever it might be, had little apparent influence upon his conduct? The explanation appears to be found in the circumstances of his accession to the throne. As Queen Anne's approaching death became apparent, the most serious statesmen, of whatever party, were filled with anxiety as to the future of England ; for although she had had eight children, none of them survived her, and the two possible claimants for the throne would be—on the one hand the Chevalier St. George, the son of James II, an Englishman by birth and traditions, but a Papist ; and, on the other hand, the Duke of Brunswick, a great grandson of James I, a German and a total stranger, but a Protestant. The nation at large was at that time ardent in its hatred of Popery, and of the absolutist principles of the Stuart family ; but this exiled family had still many devoted adherents throughout this country and in Scotland, and also among men in high places in politics. The danger of renewed civil war resulting from this cause was only too evident when, in 1715, the very year after George's accession, the Chevalier made a descent upon Scotland, and it would seem to have been the policy of George and his advisers to make the fact of his Protestantism as open and public as possible, by inscribing him upon the money, which would be in everybody's hands, as "Defender of the Faith," which was at that time popularly interpreted as defender of the Protestant faith. So F.D., or Fid. Def., was inscribed upon his coins, and has retained its position to the present day, except in the Queen's Eastern coinage, where the title "Empress of India and Defender of the Faith" would be a mockery when put into the hands of her millions of Hindoo and Mahomedan subjects in the East.

#### JAMES III AND HENRY IX (1716 AND 1788).

The period of George I's reign seems an appropriate one for introducing two silver coins and a beautiful bronze medal

of English interest, though the authors of them never actually occupied the English throne. The first are, illustrated in Fig. 80, Pl. III, which represents the son of James II, "the Pretender" or "Chevalier St. George," as James III, King of Scotland, England, France and Ireland; while the other, which is not drawn, has a similar inscription, but James VIII, instead of James III.

These coins are very rare, and their history may certainly rank among the curiosities of English coinage. When the Pretender reached Scotland, in 1715, he was enthusiastically received, and proclaimed King in Edinburgh by his followers. His prospect of success seemed to him so bright, that he had two dies prepared, one representing him as James III, King of England; the other, as James VIII, King of Scotland. In 1716, however, the rebellion failed, and he made his escape back to France, taking the unused dies with him. By that time, however, Louis XIV, who had previously befriended him, had suffered so seriously in the campaigns under the Duke of Marlborough, in Queen Anne's reign, that he desired James to leave France, and the die which contained the title, "King of France," as well as "King of England," was naturally unused still.

When the Pretender died, these dies, along with some other relics, fell into the hands of a Mr. Young, an eminent coin dealer and numismatist in London, and he had a very limited number of coins struck from them, one of which he presented to the British Museum, from which this illustration has been engraved. He distributed the others among the principal coin collectors of his acquaintance, and then broke up the dies, leaving these interesting coins as a memento of a dynasty which has occupied a high and singularly mixed place in the sympathy, the condemnation, and the romance of the British nation.

No "coin," so far as I can learn, was issued or struck by

the "young Pretender,"—"Bonnie Prince Charlie,"—who followed in his father's steps, and endeavoured in 1745 to recover the throne of his ancestors. But his rising also failed, and the hopes of the Stuarts were finally destroyed by the battle of Culloden. The illustration in Fig. 31, Pl. III, is engraved from a silver medal in the writer's possession, issued at the time (1745), and the designs—the Duke of Cumberland as an armed Roman warrior, trampling upon a prostrate foe, and holding out his arm to Britannia sitting in an anxious attitude, with the accompanying inscription, "*You bring back hope to anxious minds*" (Spem reducis mentibus anxiiis)—may convey some idea of the light in which the final suppression of the rebellion was regarded at the time as a salvation to the nation, by its deliverance from the horrors of another civil war.

The young Pretender had, however, a brother Henry—nominally Duke of York—who was at the time about twenty years of age, and when the hopes of the Stuarts were finally terminated by Charles Edward's defeat, Henry became an ecclesiastic, and, being of royal birth and an object of sympathy, the Pope, Benedict XIV, created him a Cardinal and Bishop of Tuscany. In 1788 Charles Edward died, and Henry became the only surviving heir to his grandfather's vacated throne. He desired to issue some enduring record of his claims though he never made any attempt to enforce them, and accordingly had the beautiful bronze medal (Fig. 32, Pl. III) coined in 1788, representing on the obverse his profile and titles, Henry IX Dei Gra. Mag. Brit. Franc. et Hib. Rex. Dux Eborensis (York) Card. Epis. Tusc. On the reverse is a female figure weeping over his crown and cardinal's hat lying on the ground, and showing St. Peter's and a bridge over the Tiber in the background, surrounded by the singular inscription—"Not by the good wishes of men, but by the will of God" (Haud desideriiis Hominum,

sed Voluntate Dei). He could not help being James's grandson and his sole surviving descendant, and therefore heir (in a sense) "by the will of God" to his grandfather's throne, and "King of England," etc.; but it was "not by the good wishes of men" by which, and equally by the providence of God, George III was actual King.

Henry's subsequent career was in some sense romantic, like that of his ancestors. Napoleon's conquests in Italy deprived him of his episcopal and cardinal's revenues, and in pity to his poverty George III, in 1800, gave him a pension of £4,000 a year, which he enjoyed until 1807, when he died; having lived and been welcomed for many years in London society as "Cardinal York," the last relic of the Stuart dynasty, so weak and yet so popular, and still retaining so unique a position in the sentiments and attachment of the British nation.

#### GEORGE II (1727 to 1760).

There is nothing of special interest in either the mottoes or the designs of George II, except that the word LIMA is engraved in large letters upon many of his silver coins. This was to commemorate a victory (if the action may be so dignified) which was gained by Commodore Lord Anson in this reign over a Spanish galleon bringing bullion from Peru. All the silver captured on board was brought into London, and there coined, and, in memory of its source, the word Lima, the capital of Peru, was inscribed upon the coins. In like manner the word VIGO appears upon some of Queen Anne's coins, to point out that they were made of silver taken from the Spaniards also, in an engagement off Vigo, where the galleon was captured, which, having escaped all other previous dangers, was close to home off the coast of Galicia. These captures had really at that time a national importance, for the silver currency was so worn, and the

scarcity of the metal was so great, that silver payments in England were in danger of ceasing, and national calamity loomed over the country in consequence.

#### GEORGE III (1760 to 1820)

Adopted no special motto, for the only one he took may be looked upon as accidental. In 1801, he placed the garter round the royal coat of arms as an ornament, and, in doing so, unavoidably incorporated its motto, "*Honi soit qui mal y pense.*" The appearance of this legend, therefore, upon his coins is no indication of character or sentiment, such as we have seen in the legends of previous sovereigns; but there is one change which he made in the titles borne by our kings that is not without interest. From the time of Edward III, the English monarchs had always claimed the title of King of France, with the partial exception of Henry V, after his marriage with Katherine, the daughter of the King of France. But after the loss of Calais, in Mary's reign, our kings did not possess a foot of land in that country, and it seemed an empty boast to retain the title on their money; but so it was. But after great Britain and Ireland had become united by the Act of Union of 1800, a proclamation was issued by which it was ordered that the king's title should in future be "*Rex Britanniarum*" (King of the Britains), and "*King of France*" was quietly dropped. At the same time, all the Guelph titles also disappeared, and the inscription became simply "*Rex Britanniarum*," instead of "*Mag. Brit. Franc. et Hiber. Rex. Fid. Def. Brunsvicensis et Lunenburgensis Dux. Sancti Romani Imperii Arch. Theasaurus et Elector*" (of the German Empire), contracted upon the coin itself into "*M. B. F. et H. Rex. F. D. B. et L. D. S. R. I. A. T. et E.*" 1786. The king's title, as King of Hanover, was never placed upon the English coinage. The right to this title disappeared with the accession of Her

Majesty, who, being a woman, could not hold the crown of Hanover, which therefore passed to the Duke of Cumberland, by whose grandson it is still claimed, although Hanover is now merged in the German Empire, and has lost its individuality as a kingdom.

#### GEORGE IV's (1820 TO 1830)

Coinage is entirely without interest, either in its legends or its designs; for the only approach to novelty in the latter was the crowned lion shilling, which, as we have seen (Fig. 17, Pl. II) was almost a photograph of the crowned leopard of the Black Prince. There is one legend which, it is true, was rather an enigma, viz., that upon the half-crown issued in 1825, "Dieu et Mon Droit." With the example of English coinage for the previous eight hundred years present in one's mind, the question naturally arises, What right appertaining to the king had been challenged in that or the previous year, that the assertion of "Mon Droit" should thus appear for the first time in English coinage? When Richard I first assumed the motto, the King of France had just claimed homage from him for the fief of Aquitaine, to which the lion-hearted indignantly rejoined, "Homage, indeed! I owe you nothing; but we will fight for it." So they fought. Richard emblazoned "Dieu et Mon Droit" upon his banners, and gained the victory, and homage was never afterwards claimed or paid. Although the legend has been upon the royal banner since then, it never appeared on the coinage until this half-crown of George IV—but the legend had no meaning whatever, political or otherwise, and was merely placed upon the coin as an ornament, by Merlin, the minter at that time.

#### WILLIAM IV (1830 TO 1837)

Introduced no new designs or new legends, and the only coin

of interest in his reign was the new fourpenny piece—the “Joey”—(see p. 310), issued in 1836, the year before his death.

#### VICTORIA, 1837 TO THE PRESENT TIME.

It is remarkable in looking back through the English coinage that, in the prolonged reign of her gracious Majesty—only exceeded in length twice in English history—there is scarcely a feature of interest or of curiosity in her coinage to be recorded. For the old sovereign and half sovereign, crown and shilling, &c., remain unchanged both in design and legend, and even in the Jubilee coinage, which was anticipated with so much interest, there is not a single feature of novelty, not even a record of its being the fiftieth year of her reign. The legends express nothing but the old title of Queen of the Britains; the five pound and the two pound gold pieces are only representations of similar coins issued by all her predecessors since the time of Charles II on their accession; and the only approach to novelty is the double florin, of four shillings value, to represent the American dollar, and that is merely a reproduction in design of the crown piece of Charles II.

Yet, there is one coin of her reign which can never lose its interest when the history of legends on coinage is considered, and that is the five pound gold coin (Fig. 33, Pl. III) issued on her accession. This coin was never issued as currency, but a copy was supplied, in accordance with custom, to certain high officials, Privy Councillors, high Ministers of State, the Archbishops, and some others, and to the British Museum and the Bodleian Library. It is a beautiful coin, representing the youthful Queen in her twentieth year on the obverse, and on the reverse her youth and innocence are symbolised by the figure of Una, and her need of protection and, at the same time, her trust in her

sometimes rough and unpolished but faithful protector, the British people, is symbolised by the lion standing by her side, as in that beautiful allegory of Spenser's.\* Above this emblem is inscribed the only legend adopted by an English monarch since the unhappy time of Charles I; and while it expresses the prayer that her people have since learnt really issued from her lips on hearing of her accession, "*Domine Dirige Gressus Meos*" (*O Lord direct my steps*), it has been almost prophetic of her whole course through life; and he would be a bold man indeed who should say that this simple girlish petition, uttered under such momentous circumstances, has been left without an answer.

But this accession coin, though full of interest, has never been currency, and has probably been seen by scarcely one in a million of the Queen's subjects; and, if we look for a "curiosity of English coinage," we must turn to a much more humble coin, "the Godless florin." The history of this piece is associated with some curious episodes in modern politics, now, however, almost forgotten.

In 1849, and for some years previously, Sir John Bowring and many other political economists had laboured hard, but without avail, to introduce the decimal system into English currency. The force of habit, and the strength of insular monetary customs, some of them dating back to the time of the Saxons, prevented their success. At length, under the influence of Prince Albert, who was not wedded like ourselves to our insular habits, the Government consented to the issue of a two-shilling piece, which, being the tenth of a pound, would be a beginning, at any rate, of a decimal system; and also in accordance, as it was said, with the Prince's wishes, the name of florin, familiar to him, was given to the new coin.

At that time a Whig ministry was in power, and it was

\* *Fæerie Queen*, "The Red Cross Knight." Canto III.

very desirous of pleasing the Irish and at the same time conciliating the Roman Catholics, by introducing one or other into the government; and the Mastership of the Mint becoming vacant, the opportunity seemed favourable for appointing Mr. Shiel, at once an Irishman and a Roman Catholic, to the post. As it happened, the first duty that devolved upon him was the issuing of the new florin, and when it made its appearance the inscription it bore was simply "Victoria Regina, 1849;" no "Dei gratia," no "Fid. Def." It would be impossible to convey an idea of the storm of indignation which burst forth in the House of Commons and throughout the country when this was discovered, and the ministry were overwhelmed with opprobrium for having permitted a coin to be issued in which the Queen's right to the throne "by the grace of God," and her title to be the "defender of the faith," were ignored by their new ally in the government—an Irishman, and a subject of Rome!

Poor Mr. Shiel professed his utter surprise and consternation at such an accusation. "What! he deny the Queen's divine right! Such a thing never crossed his thoughts. Her Majesty had not a more loyal and devoted subject in the realm than himself; and as to denying that she was the defender of the faith—God forbid—he never thought of denying any such thing. The fact was the coin was a small one, and he never thought of anything but how to get the Queen's name, and her title as Queen, into it, and the rest had slipped out of his mind." So the government side of the House said "Of course! It was all right. It had been a mistake." And so the matter ended. But the coin got the nickname of the "Godless Florin," and when the next issue was made, two years afterwards, the coin was thinner and larger than the original one, and ample room was found for the missing "D.G., F.D."

The Jubilee coinage of the Queen (1887) calls for little further notice in a paper on the "Curiosities of English Coinage," for its artistic qualities are outside the subject. But there is one feature which has given rise to some inconvenience, and, curiously enough, not for the first time in English coinage. The sixpence and the half-sovereign were distinguishable by care, but they resembled each other so closely, that many of the sixpences were electro-gilt, and passed off as half-sovereigns before the fraud was discovered. In consequence of this, the sixpences have been called in, and a new design issued with "sixpence" plainly stamped upon it. In George IV's first coinage (1821) a similar mishap occurred, but in that case, the half sovereigns were called in, not the silver coin. In Queen Anne's reign, the shillings and sixpences so closely resembled the guineas and half guineas, that many were gilt and passed off as gold. The difference was simply a lock of hair on the obverse of the coin, and the sceptre instead of a rose and plume of feathers on the reverse. And quite recently the American government has had to call in a white metal coinage of five-cents, marked by a large "V" but without the addition of "cents." The piece was the same size as the five-dollar gold coin, and many were gilt and passed off before the fraud was detected. They were, therefore, called in, and the new issue has "5-cents" fully expressed upon it.

Another peculiarity in the Jubilee coinage gave rise at the time of its issue to discussion and doubt. The Queen's title upon many of the coins is "Victoria D.G. Britt. Reg. F.D." The usual inscription *Britanniarum* being contracted to Britt. The presence of this double "t" may be noticed in the florins also on and after the year 1868, but previous to that year it had always been "Brit.," with a single "t" only. There was no apparent reason why the change should have been made in 1868, nor indeed why it should have been

made at all, but Mr. Freemantle, of the Royal Mint, has most obligingly referred me to a single coinage of George III—the shilling of 1817 to 1820—in which the contraction “Britt.” occurs, and also to the new small bronze pennies issued in 1860, in which the same spelling is used, and has been continued ever since. In the previous pennies the word “Britanniarum” had been in full. “The double ‘t’ was adopted in the abbreviation in accordance with the rule of grammar, that when a *plural* noun is contracted, the plural is indicated by a double consonant, and this had been forgotten in the florin coinages until 1867, when the error was discovered and corrected in the future.”

This rule of grammar is of Roman origin, and is observed in an apparently capricious manner, both in Roman and in modern usage. Thus, in English, we still habitually employ MSS. for two or more manuscripts; pp. for two or more pages; LL.D. for Doctor of *laws*, plural (civil and canon); but D.C.L. for Doctor of civil law (civil only); SS. for saints; and MM. for martyrs; but these are almost the only instances. ROMAN usage: AA, anni; Cæss., Cæsars; Impp. for emperors; Coss. for consuls; Prr. for prætors; Nobb. for nobiles; LL. OO. for linguæ orientales; BB. VV. boni viri, are all the examples easily to be found. And in examining the inscriptions upon nearly five hundred Roman coins in Akerman’s *Manual*, I found only five instances of the double consonant, while I found eleven examples of the plural contracted into a single consonant.

The usage of modern European nations is against the double consonant.

FRANCE only employs it in one instance, M. for Monsieur, MM. for Messieurs.

GERMANY and ITALY do not employ it.

SPAIN does not employ it. The dollar and smaller coins have “Rex Hispaniarum et Indiarum” (Pl.) at one time,



SUGGESTED COIN FOR THE QUEEN'S SEVENTIETH  
YEAR.

SOVEREIGN or SHILLING.



CROWN and HALF-CROWN



Translation of Motto. Obverse.—Victoria by the Grace of God Queen and Empress.

Translation of Motto. Reverse.—Throughout the Revolutionary Convulsions of 1848, and in the midst of the largest crowds, always safe, trusting in the love of her people. Peace throughout the world. In the year of her age—70. In the year of her reign—52.

Round the Edge — *Dominus Decus et Tutamen Regni*—God is the glory and safeguard of the kingdom.

and "Rex. Hispan. et Ind." (single consonant only) at another.

The two SICILIES do not help us ; for, the inscription on the Neapolitan coinage was "Rex utræque Siciliæ" (King of each Sicily, not of both Sicilies).

HOLLAND does not employ it. The Netherlands (Pl.) are contracted into "Ned." on the coinage.

The UNITED STATES, officially, never employ it ; the words are in full upon the coinage ; but, in the American official publications (blue books, &c.), the contraction is always U.S. American *literature* contracts a few words, *e.g.*, "Exx." for examples ; but even there the double consonant is a rarity.

It appears, therefore, that although a double consonant for a plural contraction has ancient and sufficient authority for its employment, it is seldom now used even in English-speaking communities ; and, with one exception in France, not at all in other European countries.

#### SUGGESTED COIN FOR THE QUEEN'S SEVENTIETH YEAR (1889).

IN CONCLUSION. If it were possible to have a new coin to commemorate the Queen's seventieth year, which should record some event in her long and important reign, and also the relation of mutual confidence and affection existing between her and her people after a reign of above fifty years, it would make a worthy accession to the many interests of previous English coinages.

The following is suggested as fulfilling both these objects, without arousing party feeling (Pl. IV). The **OVERSE** contains the Queen's effigy, bearing a sphere representing the Eastern hemisphere, on which all her Eastern dominions are represented by shading. The **REVERSE** contains the Western hemisphere, in which Canada, New Zealand, and

her other Western possessions are similarly indicated. The coin, therefore, would be an historical record of her realm in her seventieth year, which is now more extensive than when she came to the throne. And who can say that India, Canada, Australia, and other places here represented, will form part of the British Empire a hundred years hence?

The LEGEND on the obverse recites her titles, "Victoria D.G. REGINA ET IMPERATRIX,"; and that on the reverse, "PER ANNUM 1848 ET INTER TURBAS MAXIMAS SEMPER SECURA, ANIMIS SUORUM CONFISA" (*"Throughout the year 1848 in the midst of revolutions, and in the greatest crowds always safe, trusting in the love of her people"*), records her security in 1848, after eleven years of her reign, when so many European thrones were shaken or actually cast down; and also the abiding love between herself and her people, which renders her the most absolutely safe when in the midst of the thousands of her subjects assembled in her large cities, because "she has confided in their love," and has shewn her own to them without reserve in return. Can this be said of every European monarch during her reign?

The addition, "In anno Ætatis LXX et Regni LII," has also an historic value. The legend around the *edge* of the large coins might be "Dominus Decus et Tutamen Regni," which would give it a real value as a record of the Queen's sentiments through life, and would be in harmony with the "Got mit uns" of the German, and the "Dieu protège la France" of the French coinage.

If it should be possible, in 1889, to add "Per orbem Pax" (*Peace throughout the World*), it would be a wonderful record indeed, when compared with other periods of the world's history. The temple of Janus was never closed but once, and the Roman Empire was limited in extent when compared with that of the Queen.

## LAKE LAHONTAN: AN EXTINCT QUATERNARY LAKE OF NORTH-WEST NEVADA.

*Abstract of Monograph by ISRAEL C. RUSSELL, published by the  
United States Geological Survey.*

By R. McLINTOCK.

LAKE LAHONTAN is one of the two great lakes which lie—or rather, once lay—within a remarkable district known to American geologists as the Great Basin. This is situate between the Rocky Mountains and the Sierra Nevada, is rudely triangular in form, and extends from 32° to 44° N. Lat., and from 111° to 121° W. Long. Its geological structure is so peculiar as to have received a distinctive name, and is called the Great Basin Structure. The faults run mainly north and south, and some of them are traceable for 150 or 200 miles. Parts of this basin are below the level of the sea, and no river rising within its boundary finds its way to the sea, but as, during the present geological period, the evaporation has exceeded the rainfall of the district, the result has been a desiccation, more or less gradual and complete, of the two great lakes, which, during former geologic periods, filled the valleys. Of these, Lake Lahontan was the most western, and, as will be seen by a glance at the map, of a very irregular shape, with numerous deep bays and inlets enclosed by mountain ridges, and in the middle a large island, itself containing two small lakes. Some of the deeper depressions still contain water and receive rivers, but for the most part, the bed of the ancient lake is a waterless desert for the greater part of the year, with, in many places, a perfectly level floor of dried mud, which, when cracked by

the heat of the summer sun, Mr. Russell compares to a tessellated pavement of cream-coloured marble. These tracts are called in the language of the country *playas*.

The water surface of the lake at its greatest extent was 8,400 square miles; the aggregate area of the lakes now contained within the basin is put down at 1,500, and the highest high-water mark is some 530 feet above the level of Pyramid Lake, one of the more important of the now existing lakes. This highest high water mark is called by Mr. Russell, "the Lahontan Beach," and its average elevation above the sea—for it is not now horizontal all round the basin—is 4,378 feet. Thirty feet below this line there is a terrace, which he names the "Lithoid Terrace," from its being the upper limit of a calcareous deposit which he calls "lithoid tufa." At a distance of 180 feet below this, there is another line similarly named the "Dendritic Terrace," from its being the upper limit of a deposit of "dendritic tufa." Two hundred feet lower, again, there is a broad terrace which marks the upper limit of a third variety of tufa, called "Thinolite." These three species of tufa were all deposited at different epochs by the waters of the lake, and by their positions relatively to each other and to other features, enable a certain series of events in the history of the lake to be interpreted in historical order. Thus, the highest line of all, the Lahontan Beach, is a "terrace of construction" a few feet wide only, resting on a broad terrace of lithoid tufa, shewing that the water, after being stationary for a considerable period at the height of the lithoid terrace, rose for a shorter period to the height of the Lahontan beach. From other indications it would appear that, between these two high water times, there elapsed an indefinitely long period, during which the lake gradually shrank until it was wholly dry, or, at least, even further desiccated than it is now. This explanation is borne out by

an examination of the deposit of clays, etc., at the bottom of the lake, these deposits being in various places eroded by the action of rivers since the last flooding of the lake. These deposits consist, speaking roughly, of three distinct layers, viz: I.—*Upper Lacustral Clays*, containing a large number of freshwater shells and bones of mastodon or elephant, horse and camel; depth from 50 to 75 feet. II.—*Medial Gravels*, containing fossil shells and having a depth varying between 50 and 200 feet. III.—*Lower Lacustral Clays*, full depth not exposed but set down at 100 feet; contain only one fossil species, *Pompholyx effusa*, which is also found in the upper strata, and is still living in the district.

Lake Lahontan never overflowed. A geologist, therefore, taking note of this, and of the nature of the soil and rocks over and through which the rivers of the district have flowed ever since the land received its present configuration, would expect to find immense saline deposits, the salts being thrown down in the following order, as the waters evaporated: I.—Calcium carbonate; II.—Calcium sulphate; III.—Sodium sulphate; IV.—Sodium carbonate; V.—Sodium Chloride; and other more deliquescent salts after these. He would also expect to find any existing lakes or pools to contain a dense "mother-liquor," rich in magnesia, potash, and soda, and some of the less common substances, such as lithium, boracic acid, etc. But, on examining Lake Lahontan, neither of these expectations is borne out. There are immense deposits of calcium carbonate, but not of any other of the salts named; and the water bodies now extant in the old lake-bed do not contain one half per cent. of total solids in solution. The calcium carbonate is deposited in three forms, marking three epochs in the lake-history; these are, in their order of deposition, the lithoid tufa, the thino-litic tufa, and the dendritic tufa. These are deposited on

the older rocks, and upon each other, frequently forming a sheathing of fifty or sixty feet in thickness, and sometimes assuming the form of domes and castellated masses, which rise a hundred feet above the nuclei round which they were first crystallised. The lithoid tufa is described as being compact and stony in structure, light yellowish gray in colour, and as weathering into forms of extreme ruggedness. On cliffs and "buttes" it seems to be composed of comblike masses, imbricated in such a manner as to resemble a massive thatch. It is found from the lowest depths to within thirty feet of the highest water line in the basin, and in the upper regions is from 8 to 10 inches thick, lower down it reaches a thickness of 10 or 12 feet, but as the base is generally hidden by other deposits, its maximum thickness cannot be given. The next in order is the thynolite, a deposit of interlaced crystals of calcium carbonate. The colour varies from gray to brown, and the crystals are usually from a quarter of an inch to an inch in diameter, and up to 8 or 10 inches in length. This deposit is found only below the terrace situate one hundred and ten feet above the level of Pyramid Lake. In some places it occurs in alternate bands with the third variety of tufa, which, from its frequent assumption of arborescent forms, Mr. Russell calls the dendritic. From its reaching a higher level than the thynolite, it is concluded that it was deposited from a more diluted solution; if this be a correct reading, then the alternate layers are the record of successive shrinkings and floodings of the lake. Evenly stratified lacustral beds containing shells of fresh water molluscs above the layer of dendritic tufa, shew that, after depositing the tufa, the lake rose again and was essentially fresh.

This freshening of the waters of a lake after a long accumulation of salts is explained by the following theory: "A lake, after a long period of concentration, becomes

strongly saline, and finally evaporates to dryness, leaving a deposit of various salts over its bed. During the rainy season, the bottom of the basin is converted into a shallow lake of brine which deposits a layer of [earthy] sediment. On evaporating to dryness during the succeeding arid season, a stratum of salt is deposited which is, in its turn, covered by sediment. This process taking place year after year results in the formation of a stratified deposit, consisting of salts and saline clays in alternate layers. The saline deposits may thus become more and more earthy, until the entire annual accumulation consists of clays. The site of the former lake thus becomes a *playa*. A return of humid conditions would refill a basin of this character, and might form a fresh-water lake, the bottom of which would be the level surface of the submerged *playa*." (p. 224).

Mr. Russell states that every stage of this process may be seen in various lakes of the far West, and at Ragtown there is a manufacture of soda where an excavation, twenty-five feet in depth, into the bottoms of a small basin with an ordinary *playa* in it shewed that the material below the surface consisted of layers of soda-salts separated by strata of dust and mud. And in summer—when every drop of moisture from these *playa* deserts evaporates—there appears a white saline efflorescence, which sometimes covers miles of country with an incrustation frequently five or six inches in thickness, and as dazzling as snow. In addition to the soda-works just mentioned, there are salt-works in several spots in the basin whose output is regulated entirely by the demand. At one of these there is a field of salt varying in depth from a few inches to three feet, and the whole process of manufacture consists in shovelling the salt into barrows, and piling it in situations more convenient for removal.

As will no doubt be anticipated, the population is sparse in this region, water is scarce, and agriculture difficult; the

few settlements that there are lie mainly along or near the Central Pacific Railway, which traverses one of the longest reaches of the ancient lake bed from N.E. to S.W. From the descriptions, however, and pictures—both excellent in their way—contained in the very interesting monograph of which this paper is a very inadequate summary, it is clear that, to the well-to-do traveller in search of something new, Lake Lahontan offers great attractions. I forgot to state that Mr. R. considers that the present state of things in the Lahontan basin cannot be more than three hundred years old.

## IS THOUGHT POSSIBLE WITHOUT WORDS? A DISCUSSION ON MAX MÜLLER AND DARWIN.\*

By JOHN NEWTON, M.R.C.S.

I ESTEEM myself fortunate in being able to bring before you a subject of the deepest interest to all, and to the discussion of which everyone will be able to contribute something from his own experience. Professor Max Müller, one of the most distinguished scholars and brilliant writers of our time, has lately given to the world a large and profoundly interesting volume called, *The Science of Thought*, on the title-page of which is prominently displayed the text of his discourse, that discovery which is to revolutionise the science of thought, and reduce all to a mere study of the science of language. It is comprised in these few words:—"No Reason without Language; No Language without Reason."

At the outset, he proceeds to define his terms: "I mean by thought the act of thinking, and by thinking I mean no more than combining. *I think* means to me the same as the Latin *cogito* (namely, *co-agito*, I bring together), only, with the proviso, that bringing together, or combining, implies separating; for we cannot combine two or many things without, at the same time, separating them from all the rest. Hobbes expressed the same truth, long ago, when he said that all our thinking consisted in addition and subtraction."

"By language we mean what the Greeks called *logos*, word and meaning in one" (p. 29); that is, human speech, words, and nothing else. Thus, he says, that "we cannot think without words," nor "make even the first step in

\* *The Science of Thought*, by F. Max Müller. 1 vol. 8vo, pp. xxiv and 664. London, 1887.

philosophy before we have clearly seen that *we think in words, and in nothing but words*. Yet we may open book after book on logic, the science or art of thought, and we are met everywhere by the same vagueness, or want of intellectual courage, which keeps their authors from saying either 'Yes,' or 'No,' to this, the most momentous of all questions in philosophy—Is thought possible without words" (p. 31). "I freely admit that thoughts may exist without words, because other signs may take the place of words (as systems of writing, or algebraic symbols). Five fingers, or five lines, are quite sufficient to convey the concept of five, between people speaking different languages, possibly between deaf and dumb people who speak no language at all." "But all these concessions may readily be made without in the least affecting the general proposition, that thoughts are impossible without words, or without some other signs answering the same purpose as words" (pp. 51-2).

He evidently here means,—certain words being primarily understood, for which these signs are used as equivalents.

He sees, of course, that the intelligence of deaf mutes is against him; but this he meets by asserting that all their reasoning powers are derived from the education they receive. "They have learned to think and reason from those who use words, only substituting other signs for their words and concepts; while, if they are not so taught, they never rise beyond what we may call thinking, even in animals; nay, often remain entirely imbecile. I may cite the authoritative words of Professor Huxley: 'A race of dumb men, deprived of all communication with those who could speak, would be little indeed removed from the brutes.'" (p. 63).

As to the great world of animal life in the midst of which we are placed, he denies emphatically that animals possess anything which can be truly called "thought," or "reason."

He heads one section disdainfully, "Menagerie Psychology," in which he insists, "that we can never know what passes within the mind of animals, though we may infer all we like, and always do infer exactly what we like" (p. 5). "All the observations on the intelligence of animals, and all the conclusions that have been based on it, are useless; nay! even mischievous" (p. 15). "We do not know in the least how animals philosophise, and how an ox recognises his stable-door" (p. 27). "No reason without language." "No one truly thinks who does not speak" (p. 64). "Language is the specific difference which distinguishes men from animals, at once disproving the theory that men were developed out of animals. There is not the slightest reason to suppose that animals use any significant words, vocal or otherwise, or connect one single definite idea with one single definite word. In short, the case of animals proves, not that it is possible to think without language, but that it is possible to act intelligently by means with which mankind are unacquainted" (p. 172, &c.).

In considering this remarkable book, we must remember that Max Müller has devoted his brilliant talents, through a long and successful career, chiefly to one subject—the study of languages. Can we be surprised, if to him this appears the Alpha and Omega, the beginning and the end of human knowledge, without which man can know nothing, possessing which he may know all things?

Across his path, at the very outset, stand the deaf and dumb, and we shall soon see that he fails to remove the difficulty, since many a dumb boy or girl shows as much intelligence as others. Dr. Kitto testifies:—"I had a boyish acquaintance with a born deaf mute, running wild about the streets, and entirely uninstructed. He was one of the sharpest lads I ever knew. The signs he used were of his own devising, and had been learned from

him by the lads with whom he associated, though some were of their invention. His system of signs was in some respects very ingenious, in others strikingly significant, and in some grossly simple. It exhibited a vast amount of curious contrivances and resources for getting over the difficulties which must necessarily occur in making manual signs the representatives of facts or ideas " (p. 116).\*

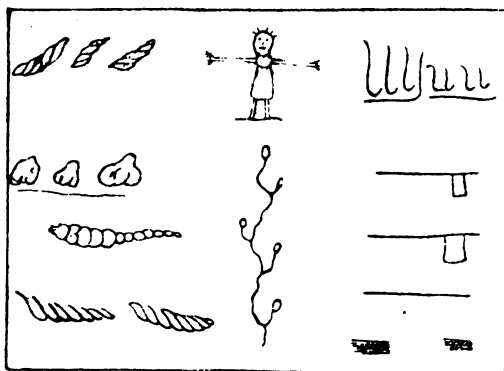
And against the opinion of Professor Huxley, who is not an expert, we may place that of the famous Abbé Sicard, based on a lifelong experience. He wrote :—" May there not exist in some corner of the world an entire people of deaf mutes ? Well, suppose these individuals were so degraded, do you think they would remain without communication and without intelligence ? They would have, without any manner of doubt, a language of signs, and, possibly, more rich than our own ; it would be certainly unequivocal, always the faithful portrait of the affections of the soul ; and then, what should hinder them from being civilized ? Why should they not have a police, a government, laws, very probably less involved in obscurity than our own." This great man was clearly of opinion, which he constantly avowed, that signs were the proper medium of intercourse for deaf mutes. Their own estimation of signs is evinced by the hilarity and abandon with which they communicate with one another by signs, as compared with the restraint and hesitation which they manifest in the use of written, or still more, when they imitate vocal, language. Kitto quotes from a deaf mute, who praises the simple directness of mimetic signs, and who writes :—" The language of speech is full of falsehood and troubles."

Pictures also are a form of mimetic signs, more direct, simple, and understandable than any language. The Egyptians and Assyrians have told us far more, and much more

\* *The Lost Senses—Deafness*, by John Kitto, D.D., London, 1845.

eloquently, of themselves, their religious rites and beliefs, their wars and their pastimes, by the innumerable pictures and sculptures with which they delighted to cover their palaces and tombs, than we know, or ever can know, from their written records. The human eye is less liable to be affected in its habits of interpretation than the ear, and a picture of Hogarth's is better evidence as to the state of society a century and a half ago in England than whole volumes of wordy disquisition.

In Freycinet and Arago's *Voyage to the Eastern Ocean*, it is related that, when off the Caroline Islands, a native came off in his canoe bringing some lovely shells, which he desired to barter. How was the bargain to be made, when no one on board the ship understood his language? The man got over the difficulty very easily; he had arranged all beforehand in a picture, here subjoined. The vine beneath his



feet may denote friendship. In the left column are depicted the number and kind of shells offered by the native; in the right column the things he wanted in exchange, namely, seven fish hooks, three large and four small, two axes, and two parcels of needles. The transaction it appears was readily accomplished to the satisfaction of both parties.

Here surely was reason without language! It might be objected that the islander's picture represented words, but this was not so. Vocal names for the act and the goods were in no way implied or needed, and the bargain could have been concluded equally well if all the parties concerned had been deaf mutes.

The next great obstacle in the Professor's path is the animal world around us, to which he refuses altogether the possession of reason, because it has not what he defines as language, and which he regards therefore as having no kindred or affinity with ourselves. I venture to say that some practical acquaintance with anatomy and physiology would have changed his views materially. Had he dissected the eye of the ox he would have realized vividly that it is identical in structure and function with the human eye; that the image of the stable-door will be produced on the retina of the ox exactly as it would be on his; that frequent repetition will produce memory and association; and thus the ox remembers his stable-door. It would have saved him also from the futile attempt to discredit Darwin, whose *Origin of Species* appears destined to work as complete a revolution in biological science as Newton's *Principia* did in astronomy. As Dr. Dallinger has well said:—"Few biologists now-a-days need any direct demonstration to convince them of the truth of Darwin's great law. It underlies, as a necessity, all our widest and deepest biological knowledge."\* And if it be universally true of all other living beings, it must be equally true of man, who is therefore the modified descendant of some lower pre-existing form, the nearest at present known being the higher apes. In proof of this, Darwin has brought together a vast array of facts, about which there is no dispute, and which admit of no other explanation. We may mention a few of these. That the

\* Annual Address as President of the Royal Microscopical Society, 1887.

apes, especially the chimpanzee and the orang, come very close to man in their organization, much nearer than to any other animal, is generally recognised. They show in all their organs so close an affinity that the most exact anatomical investigation is needed in order to demonstrate those differences which really exist. For every bone, muscle, tooth, and even pattern of a tooth, there is a corresponding bone, muscle, tooth, and pattern tooth in an ape. So it is with the brain. The brains of man, the orang, and the chimpanzee come very close together. Man is liable to communicate and to receive from animals many diseases, which proves close similarity in their tissues and blood. Monkeys are specially prone to our diseases, such as bronchitis, rheumatism, consumption, cataract of the eye. Medicines produce the same effect on them as on us. Man is infested with the same parasites, both internally and externally, as are the higher animals; and, in the earlier stages of his development, the human embryo is almost identical with that of the dog or the ape. For a considerable period the human embryo has a tail as large as that of the dog, the growth of which is fortunately arrested with us, to remain in a rudimentary form to the end of life. At the seventh month the human brain is almost identical with that of the adult baboon. Rudiments of various muscles also occur in the human body which are regularly present in animals, such as those which move the ears and the scalp. Man possesses in the cæcum a rudimentary bowel, which attains to a great size in many animals; but is in him, very small, perfectly useless, even sometimes the cause of death. It is a most interesting fact that the bones of ancient races of men much more frequently present structures which resemble those of the lower animals, than do the modern, as would of necessity be the case if they stand nearer in the long line of descent to some remote animal-like progenitors. All these, and innumerable other

undoubted facts, are readily explainable if we admit that man and all other vertebrate animals have been constructed on the same general model, pass through the same early stages of development, and retain certain parts in common. Consequently we ought frankly to admit their community of descent; to take any other view is to admit that our own structure, and that of all the animals around us, is a mere snare laid to entrap our judgment. Surely they are all, including ourselves, links in one chain of being, which begins with the lowest form of life, and ends in the highest. And we cannot escape the conviction that the mental powers of the higher animals are identical with those of man, only differing in degree. It would be easy to show, by examples from every part of the animal world, the universal possession of reason, as defined by Max Müller himself. Take, for instance, the hermit-crab. This mean little creature, worm-like, and soft of body, is yet provided with a pair of strong claws; so it hides its poor defenceless body in the first empty whelk-shell it can find, and is then ready to face the world. Drop a nice empty whelk-shell before it, and see what it will do. It scrambles up to the new shell and curiously examines it all round, gauging the size, form, and depth with its long antennæ. If decidedly inferior to its present house, it soon rejects the new one offered; but, if eligible, it examines again and again, poising and pushing the shell about to try its comparative weight. At length it whisks out its poor, naked body, and pops it into the new shell, still, however, retaining hold of the first one with its claw, repeating this many times before making a final change; and if you try to pull away the old shell before it has settled in the new one, it is back again in a twinkling. Here is cautious conservatism! here surely is weighing and measuring, adding and subtracting, all that Max Müller requires in his definition of human thought and reason.

That best friend of man, the dog, shall furnish us with two more examples, vouched for by Mr. Romanes (*Animal Intelligence*, p. 465).

"My friend, Dr. Rae, the well-known traveller and naturalist, knew a dog in Orkney, which used to accompany his master to church. To do so, he had to swim a channel about a mile wide; and before taking to the water, he used to run about a mile to the north when the tide was flowing, and a nearly equal distance to the south when the tide was ebbing, almost invariably calculating his distance so well that he landed at the nearest point to the church. How the dog managed to calculate the strength of the spring and neap tides at their various rates of speed, and always to swim at the proper angle, is most surprising." (Doubtless the dog had attained to this knowledge by slow degrees, as the result of frequent trials.)

A still more striking instance was vouched for by Mr. P. Fothergill. His retriever used to swim out to him when on board ship. "The tides ran more than five knots, and she invariably came down to a little wharf abreast the ship, and gazed intently for small pieces of stick or straw, and, having thus ascertained the drift of the tide, ran up-tide and swam off. But one day she was observed to wait an unusual time on the wharf; no wood or straw gave her the required information. After waiting some time, she lay down on the planks, and dropped one paw into the water, and found by the feel which way the tide ran, got up, and ran up stream as usual."

Surely these are examples of a very high standard of reason, the cautious step from the known to the less known, and the balancing of probabilities. What more can we ask, since, as Butler has said, probability is the very guide of life?

Again, we communicate readily with the higher animals

by means of words, the meaning of which they soon learn.\* Max Müller, indeed, denies this, but every sheep-dog is proof to the contrary; and a further advance is seen in some parrots, who not only attach a definite meaning to certain words, but pronounce the words also.

All animals develop some mode of communicating with their kind, so as to be understood. If they have no voice organs, like the innumerable insect tribes, they produce sounds by friction between the various parts of their bodies, or by beating the air with their wings. A curious sight it is to see two ants talking together. They stop; stand with their heads close together, opposite each other; work their long, sensitive antennæ, or feelers, in the liveliest manner; and tap and stroke each other's heads. Most wild animals that herd in companies post sentinels to warn the rest of danger, and have recognised leaders whom they follow. All these things would be impossible unless they had some equivalent for language. Gestures, tones of voice, the various natural cries that express emotion, go a long way. They do their best to speak; they can do no more. But there is really a great range of expressive sounds in the animal world. Thus Houzeau studied the cries of the domestic fowl, and he distinguished at least twelve, each uttered on appropriate occasions.† Human language does not answer its purpose a whit more perfectly than the hen's cluck to call her chickens. The cock is at once informed by her when she has laid an egg, and he hastens to offer his congratulations. Indeed, the cries and songs of birds are wonderfully numerous and varied. And this leads to the curious remark that, excluding man, the highest and most

\* Just as infants know their names, and some other words, long before they can pronounce them. Are they, too, without reason, and does reason only come at the exact moment when they first speak?

† *Etudes sur les facultés mentales des animaux comparées à celles de l'homme*, 1872. Vol. ii, p. 347.

intelligent animals are amongst the most silent; the very opposite of what we should expect if Max Müller's thesis were true. Whilst the birds, though inferior in intelligence, are far superior in vocal utterance, several, as the magpie, the starling, and the parrot, readily imitate some words of our human speech. Could we but add the acute intelligence of the monkey or the dog to the vocal and mimetic powers of the parrot, what an advance towards humanity would be made! One cannot help thinking that the favourable variation occurred when a highly sociable form of anthropoid ape developed powers of vocal imitation, and thus laid the foundations of language, the most precious acquisition of our race.

Surely, it is unsafe at the outset to assert that there is no analogy between the voices of animals and human speech. The origin of language is still as great a mystery as ever. Suppose we grant, though this is disputed, that all our words have been derived from eight hundred roots, this is only to push the difficulty a little further back—for whence the roots? Noiré's theory, adopted by Max Müller, that they come from the common cries of people at work together, is utterly inadequate. Such cries are few and simple, and until twenty or thirty roots, at any rate, probably thus derived, can be pointed out of the eight hundred, the theory scarcely seems worth discussing.

Max Müller insists, at great length, that it is impossible to form general conceptions, or concepts, as he calls them, without names. Thus, he says, we cannot call up before the mind the thought of Dog, without using the word, or a similar one, such as Bow-wow (p. 58). But surely he forgets that the thought can be conjured up just as readily by recalling to the mind the mental image, or by a picture of a dog which may be so indefinite as not to resemble any one dog in particular, yet will call up the general idea

at once, even with a deaf mute who cannot speak. For what are general concepts ? By the superposition of many definite images, one indefinite image is the result, having something in common with all. Thus, from the contemplation of many men we get the general concept—Man, which may be either expressed by the word, or by a mimetic sign, or pictured, or carved, or remain unexpressed to the world as a mental image only. It follows that the higher animals are also capable of forming general concepts. If I say to my dog—"Cat," he pricks up his ears and looks fierce ; the general idea thus called up of his pet aversion is enough, though no individual cat be present.

This power of dealing with mental images only, without the need of words, is well exemplified by some accomplished chess players, who can play a long game at chess, silent, invisible, merely by calling up the successive mental images.

It is now ascertained that language, as we know it, was comparatively a late acquisition of the human race, and before that time, according to Max Müller, "man was, therefore, without reason !" (p. 85). Thus, to prop up an untenable theory, he is fain to ignore innumerable proofs occurring all around us, that men are continually performing acts requiring the acutest reasoning and observing powers, yet with which language can have nothing to do.

The fencer, the cricketer, the lawn-tennis player, has but a moment of time to decide, amongst many possibilities, what his line of attack or defence shall be. This is intricate reasoning, requiring the highest skill of its kind, yet precluding the very thought of words.

When, in the fulness of time, the beginnings of language were laid, man's wants were few, and but few words were needed. Even in our day all sorts of gradations exist. Compare the series of clicks which, filled out by variety of

tones and grimace, make up the speech of the Bosjesman, with the copious eloquence and extensive vocabulary of Homer or Shakspeare. The interval thus marked is surely greater than that between the speech of the highest animals and the lowest man. Quite recently, in a remote Somersetshire village, the clergyman found that about four hundred words constituted the entire vocabulary of his flock, one of whom, being called upon to give his evidence as eyewitness in a case of manslaughter, thus spoke :—"He'd a stick, and he'd a stick, and he lick'd he, and he lick'd he, and, if he'd a lick'd he as hard as he lick'd he, he'd a kill'd he, and not he he." Even Shakspeare, however, only used fifteen thousand words to produce his marvellous works, yet our latest dictionaries are said to contain two hundred and fifty thousand words ! Too much praise, it seems to me, is often bestowed say on our own language. What is it but a vast collection of shreds and patches, odds and ends, bits of this and bits of that, stuck together with little system or method. Could we begin all over again, with our present lights, to make an entirely new instrument for expressing audibly our thoughts, we see what might be done in the new universal language, called Volapuk, the invention of a clever German. The reviewer in the *Athenæum* states that, after only three or four hours study, he was able to read a commercial letter written in the new language.

The faculty of language, thus laboriously developed through untold ages, is very differently inherited. We now know that it is located in a particular part of the brain, the third frontal convolution, which may be more developed, like the blacksmith's arm, by constant exercise, or may become atrophied for want of use, as in the deaf mute. It is with us all a matter of education, and the cries of the infant (*in-fans*, not speaking) are much like those of the young of other animals.

To a specialist in language, like Professor Max Müller, the transference of his ideas into words is easy, is made unconsciously, without effort. But to many it is a pain, an agony: and this, not because of any paucity of ideas, or thoughts, or reasons, but because they were not endowed at birth with the faculty of representing their thoughts through this particular medium, and have not since acquired it. Language, indeed, is but one of the many modes by which man presents his ideas to the world. The sculptor breathes all his soul into the marble, the gem, or the medal; the painter tells his best thoughts through his picture; the musician through his music; the architect in some noble building; the mechanic in creating some complex machine; yet all these conceptions may be quite irrespective of speech. Still they are expressions of the highest reason. Language is but one of the tools of thought, and, at best, a very imperfect one.

There is an eloquent article by Oscar Browning (*Fortnightly Review*, April, 1888), where he dwells on the utter poverty of language to express the higher, more complex sentiments. "The language of passion we understand. All beyond is metaphor, and metaphor kills." A grand idea is often far better expressed by the sculptor, or the painter, than by any language. Names are mere arbitrary signs for things or ideas, and having, like our written characters, lost their first meaning as pictures, are now mere counters in the game of social intercourse. "Cat" might be "dog," or "dog" "cat," if the associated idea were changed. They are the common circulating medium in the intellectual exchange of life, by which we barter our ideas for those of others. But to maintain that they are the absolute measure of our reason, as Max Müller does, is really too much. What! are we then to measure intellect by facility of verbiage? Many of the most profound and original thinkers who ever lived

have been remarkable for their taciturnity, have felt an insuperable objection to speaking in public, or committing their ideas to writing. Such were John Hunter and Sir Isaac Newton. Every Cheap Jack at a fair could have put Newton and Hunter to shame if it had been a question of language. Surely few men have been endowed with the gift of ready, eloquent speech in a higher degree than Shelley and Coleridge, yet more unreasonable beings, perhaps, never existed outside of an asylum. We read in the Old Testament that God chose Moses to be the leader and lawgiver of Israel, but he would have modestly declined the honour. "And Moses said to Jehovah:—Oh, my Lord, I am not a man of words, but I am slow of speech and of a slow tongue." He was reminded that Aaron, his brother, was an eloquent speaker, and would supply his defects. Well, Aaron was once only left for a few days in charge of Israel, and a pretty mess he made of it! William the Silent, the saviour of Holland, was surely as great a statesman as our Castlereagh, who was compared to a pump, because he

"Still could spout and spout away  
In one weak, washy, everlasting flood."

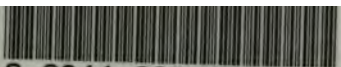
But this is a hint to me to conclude. To say that there is no language without reason, is like saying—there is no steam engine without reason, and is a mere truism. If language be not a product of reason, what else could produce it? But to say—there is no reason without language—is contrary to all we know of the animal world around us, and of ourselves.

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